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ABSTRACT

The following papers are included: "Emerging Themes in Youth Apprenticeship Programs" (Evanciew); "Improving the U.S. System of School-to Work Transition for Youth and Young Adults" (Stone); "Recent National Studies and Reports on Education and Economic Reform" (Ellibee); "Improving Employment Readiness of Urban Youth" (Womble, Ruff, Jones); "'Vocational' Student Participation in Vocational and Academic Courses in Illinois High Schools" (Roegge, Flesher, Evans); "Perceptions and Practices of Georgia Guidance Counselors Regarding Agricultural Education Programs" (Woodward, Herren); "Career Indecision Types of Rural Adolescents in the Career Exploration Stage" (Rojewski); "Perceptions of Regular and Special Population Students toward Enrollment Practices and Career Value of Their Current Vocational Education Program" (Presley, Flowers, Jewell); "Analysis of Students' Classroom Experiences in Vocational and Academic Classes" (Schmidt); "Teacher Use of Assessment Information in Ohio Vocatonal Education Programs" (Kershaw, McCaslin); "Measuring Academic and Other Performance in Vocatonal Education" (McCaslin, Headley); "The Effects of Cooperative Learning Methods on Achievement, Retention, and Attitudes of Home Economics Students in North Carolina" (Abu, Flowers); "Is Tech Prep Really Reform?" (Bragg, Hammons); "Attitudes of North Carolina Principals toward Secondary Vocational Education Programs in Technology Education" (Jewell); "Technology Education in Transition" (Wicklein, Hill, Daugherty); "Identifying Priorities for Tech Prep Teacher Education" (Wentling, Roegge, Bragg); "The Knowledge and Perceptions of Michigan Secondary Vocational Education Administrators toward Vocational Student Organizations" (D'Haem, Wamhoff, Elliot); "Contributions of Vocational Education to Education Reform as Perceived by Vocational Education Policy Influencers" (Watkins); "Principals' Perceptions of Non-Traditional Gender Vocational Teachers" (Rolling, Burnett); "Multivariate Analysis of Perceptions Held by Vocational Educators toward Female Participation in Nontraditional Programs" (Sheng); "A Comparison of the Educational Philosophies of Training and Development Professors, Leaders, and Practitioners" (Spurgeon, Moore); "Teacher Characteristics Related to the Adoption of Agriscience Curriculum in Virginia Agricultural

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AMERICAN VOCATIONAL EDUCATION

RESEARCH ASSOCIATION

PROCEEDINGS (AVA 1994)

Presented at

American Vocational Association
1994 Annual Convention
Dallas, Texas
December 9-13 , 1994

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AVERA President-Elect and Program Chair
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NOTES FROM AVERA PRESIDENT-ELECT

The 1994 American Vocational Association (AVA) Annual Convention was held in Dallas, Texas, December 9-13. The American Vocational Education Research Association (AVERA) had six paper presentation sessions at AVA. The 24 papers presented were selected through a blind, peer refereed process. There were a total of eight reviewers, with each proposal being read by at least two or three reviewers. The 24 papers contained herein are from authors who presented their papers at AVA.

David J. Pucel

David J. Pucel, President-Elect and Program Chair
American Vocational Education Research Association
1994 AVA Annual Convention

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Emerging themes in youth apprenticeship programs:

A qualitative study

Cheryl E. P. Evanciew

The University of Georgia

Running head: YOUTH APPRENTICESHIP PROGRAMS

Abstract

A major concern of our current educational system is instructional practices that emphasizes abstract rather than contextual learning methods. Youth apprenticeship programs are designed to situate learning in the workplace, thereby providing students with contextual, meaningful, and relevant use of knowledge taught in school. In contrast to traditional educational practices, which rely on the transfer of knowledge from one situation to another, the situated cognition theory places learning in a community of experienced practitioners in an effort to place learning in the context it will be used. This dissertation research seeks to determine the effectiveness of youth apprenticeship programs by gathering data related to the situated cognition theory of learning and instruction. Data will be collected and analyzed qualitatively through observations and interviews of management, adult mentors, and youth apprentices and through analysis of documents..

Emerging Themes in Youth Apprenticeship Programs: A Qualitative Study

Our current educational system has been criticized for doing an inadequate job of preparing students for work and adult life. Part of this inadequacy may result from programs and curriculums used in schools that focus on preparing students for college rather than work (Kazis, 1993). However, recent reports indicate that approximately 60% of high school graduates do not go to college (Filipczak, 1992). In fact, many jobs currently available to high school graduates either require little education or training beyond high school or require specialized technical training rather than a four-year college degree (Carson, Huelskamp, & Woodall, 1993; Hodgkinson, 1985).

Inadequate preparation for work and life after high school may partially result from a historic lack of formal school-to-work transition programs for youth (Aring, 1993). Students often exit high school with little or no formal training to prepare them for life in an adult world. In addition to work-related skills and concerns, appropriate social skills needed for life as independent adults are often lacking in high school graduates. Exposure to typical adult social skills, such as being a worker, a member of a community, and a spouse and/or parent, may assist young adults in becoming effective and productive citizens of a workplace as well as a community. According to Pallas (1993), students need socialization skills "so that they can carry out the adult roles embedded in the structure of the society" (p. 411).

To assists students in becoming independent workers and adults, schools are beginning to explore and implement school-to-work transition programs that may better prepare students for life after high school. School-to-work transition is defined "as a condition where the student can demonstrate the skills necessary for entry into a primary labor market occupation or career path consistent with his or her aspirations" (Stone, 1992, p. 7). Effective school-to-work transition programs may not only provide students with relevant educational experiences that resemble work experiences they may encounter after graduation, these programs may also provide students with critical social skills needed for adult life by allowing students to participate in the adult world of work before exiting high school (Cremin, 1989; Pallas, 1993).

There are a variety of transition programs available for student participation and for research. Youth apprenticeships were selected for this study because they can provide a holistic and practical school-to-work transition program that integrates relevant learning with social activities needed for cognitive development (Bailey, 1993). Youth apprenticeships give students the opportunity to utilize school knowledge with real work activities to provide a bridge between intellectual and cognitive skills by utilizing contextual problem-solving in real world, authentic settings (Raizen, 1989).

Youth apprenticeship programs also provide students an opportunity to acquire skills and knowledge under the guidance of a mentor or master craft's person (Smith & Rojewski, 1993). This arrangement allows for guided work experiences and learning opportunities not always found in other programs (Stern, 1992). According to Hamilton (1989), a mentor's responsibilities include instructing a learner, demonstrating a task to a learner, coaching the learner as tasks are performed, explaining why tasks are done in a particular way, challenging the learner to do well, initiating the learner into the workplace culture, and affirming the learner's value as a person.

Haensly and Parsons (1993) add that mentors assist learners in gaining important social skills and increasing their independence and autonomy.

Purpose of the Study

With increased interest in the workplace as a learning environment for adolescents, appropriate pedagogy is needed to guide the implementation and effectiveness of work-based programs. The purpose of this qualitative study will be to explore, discover, and describe experiences between mentors and youth apprentices in a youth apprenticeship program as those experiences relate to situated cognition theory. Observations, interviews, and document analysis will be used resulting in a naturalistic description of themes or patterns. At this stage in the research, situated cognition theory will be generally defined as a social situation and its relationship to learning. Results of this study may contribute to the effectiveness of learning in the workplace and youth apprenticeship programs by providing information on how *participants* feel about learning in a workplace.

Research Questions

1. What learning/teaching experiences occur between mentors and youth apprentices in workplaces participating in youth apprenticeship programs?
2. What teaching methods and behaviors do mentors (or other experienced workers) use when working with youth apprentices?
3. How does the apprentice experience these methods and behaviors?
4. Do participants believe a more relevant and useful education is acquired by participating in the workplace component of youth apprenticeships?

Conceptual Framework

Situated cognition theory appears to provide a suitable framework for observing how individuals learn in a workplace. Situated cognition theory views learning in a real world environment as a more effective and relevant model of learning because it places learning in a community of expert practitioners. Furthermore, several strategies for providing effective learning associated with situated cognition have their basis in traditional apprenticeship approaches to learning (Lave, 1988).

Situated cognition can be traced back to John Dewey in the late 1800s as well as to Vygotsky in the early to mid-1900s. Dewey was involved in what is known as the progressive education movement (Berryman & Bailey, 1992; Niebuhr, 1984; Olafson, 1977). Progressivists believed education should take place within the community rather than in isolation from the community (Lerwick, 1979). Similarly, Dewey believed that schools should provide meaning and relevance to learning activities to meet needs of society. In essence, Dewey advocated "the integration of the head and hand, of mind and action, of academic and vocational" (Berryman & Bailey, p. 76).

Similarly, Vygotsky developed a theoretical framework that combined social institutions, culture, activities, and cognition. Vygotsky referred to his work as the theory of activity (Davydov & Radzikhovskii, 1985). According to this theory, learning occurs most effectively when individuals are involved in practical activities that incorporate use of tools common to a particular culture or society. Furthermore, the theory of activity states that in order for learning to occur, individuals should be able to recognize and associate past experiences with new experiences. When individuals can make this association with the past, learning has become functional and incorporated in the mind for use in other situations.

Although often met with debate from researchers with differing views, Dewey and Vygotsky provided new opportunities for exploring how learning occurs. Cognitive psychologists, borrowing from Dewey and Vygotsky, began conducting studies on learning within a community. They referred to their research as "situated cognition" (Brown, Collins, & Duguid, 1989; Collins, Brown, & Newman, 1989; Lave, 1988). Situated cognition states that whenever possible, learning should occur within the context of a given situation and should attempt to replicate as closely as possible practices used by experts in a given culture. Situated cognition theory focuses on "the relationship between learning and the social situations in which it [i.e., learning] occurs" (Lave & Wenger, 1991, p. 14). The foundation of situated learning is the placement of learning in a *real-life* context rather than as an individual abstract mental activity (Schell & Babich, 1993).

This theory was selected because of its emphasis on learning in a real-world environment. Since a youth apprenticeship program occurs within a given community, situated cognition appears to hold promise for seeking answers to the questions posed in this study. In the context of this study, situation cognition theory may be used as a foundation because of its emphasis on learning in a real-life context.

Research Design

Qualitative procedures will be used for this study because I want to explore, discover, and describe the nature of experiences between mentors and youth apprentices in a youth apprenticeship program. I will use a constructivist paradigm to gather, analyze and interpret, and report the experiences of participants. I will use the situated cognition theory as a guide for comparing the data because situated cognition focuses on learning and its relationship to the social situation in which learning occurs (Lave & Wenger, 1991).

The constructivist paradigm is "a wide-ranging eclectic framework" (Schwandt, 1994, p. 128). Constructivists emphasize the world of experience at it is felt by participants. Constructivists believe that knowledge and truth are created rather than discovered. This paradigm acknowledges that knowledge is socially constructed through a culture's history. From this perspective, knowledge is developmental and non-objective (Brooks & Brooks, 1993; Reid, Kurkjian, & Carruthers, 1994).

This study will also use a theoretical orientation for gathering specific data related to situated cognition theory. By using a specific theory for data collection, the researcher maintains a focus for the study, is able to integrate pieces of information into a whole, and offer a general explanation of the phenomenom being studied (Henstrand, 1993; Lincoln & Guba, 1985; Merriam, 1988). Maintaining a focus related to a theory assists the researcher in making decisions about what information to retain and discard. This focus also assists the researcher in reporting what occurs in natural settings by using theory to compare what was observed with what the theory states.

Data Collection Procedures

This study will focus on a youth apprenticeship program located in a small, rural southeastern community. The participants are high school youth apprentices, adult mentors, and management personnel working in selected businesses. Students in the youth apprenticeship program were in the following vocational areas: business management, automotive mechanics, and computer electronics. The focus of this study will be the everyday experiences and events of mentors and youth apprentices in the workplace. Particular attention will be paid to the learning/teaching experiences and behaviors that occur between mentors and youth apprentices. Data will be collected using observations, interviews, and document analysis.

Participant Observation

Participant observation is a data collection method that allows a researcher to gather impressions of the situation firsthand and record behavior as it occurs (Adler & Adler, 1994; Merriam, 1988). Participant observation lets the researcher observe who and what is involved, where and when events occur, and how and why events occur. Participant observation allows researchers to see behaviors and actions as they occur rather than just relying on accounts from interviews.

In this study, all observations will be recorded using field notes to describe interactions between youth apprentice and mentor, activities the apprentice is engaged in, any statements made by the apprentice regarding how the given task was learned, and other subtle factors such as how participants react to unplanned events, contextual meaning of words or actions, and nonverbal communications (Merriam, 1988). Field notes will include descriptive notes of participants and activities, reflective notes regarding my feelings or impressions at the time, and demographic information about the time, place, and date of the observation (Creswell, 1994).

Interviews

Interviews are a face-to-face questioning of participants for the purpose of gathering data (LeCompte & Preissle, 1993). Interviews attempt to "find out what is in and on someone else's mind" (Patton, 1990, p. 278). Interviewing is used when behaviors, feelings, attitudes, or interpretations of people cannot be directly observed (Merriam, 1988).

Interviews vary in type from highly structured to conversational formats. Highly structured interviews seek to ensure that the same basic information is obtained from all participants. In contrast, conversational interviews are more spontaneous and occur from a natural flow of interaction between the interviewer and participants. I will combine these two approaches by asking the same questions to all participants but not necessarily in the same order. This combination of approaches allows for flexibility and in-depth conversations between participants and researchers (Fontana & Frey, 1994; Patton, 1990). To ensure accurate and complete information, I will use an audio tape recorder during each interview and take notes in case the tape recorder is malfunctioning.

Document Analysis

Documents may provide a rich source of information. Documents, artifacts (LeCompte & Preissle, 1993), or records (Hodder, 1994), are usually written materials found in a variety of forms. Merriam (1988) describes three major types of documents: public or archival records, personal documents, and physical traces. In this study, document analysis may provide information about program decisions, activities, and background, as well as suggest additional ideas about "important questions to pursue through more direct observations and interviewing" (Patton, 1990, p. 233). Analysis of documents may provide information that key participants know nothing about and may offer a different perspective of the situation under study (Hodder, 1994).

For my purposes, I will rely mainly on public records or documents. Because I am studying an educational situation, many documents that provide information about the student or program (grades, student evaluations, legislation, reports, program records, or program guidelines) may contribute to my study. Furthermore, businesses may have documents in the form of memos, employee records, organizational rules, or other official and unofficial documents that pertain to their involvement in the youth apprenticeship program.

Document recording protocol will include photocopies when ever possible. If I cannot obtain a copy, I will record in field notes information about documents or materials by identifying key categories in the source of information (Creswell, 1994).

Data Analysis Procedures

Data analysis in qualitative research often occurs simultaneously with data collection, interpretation, and reporting (Creswell, 1994). Analysis during data collection provides the researcher a method for narrowing the study by focusing on the specific problem associated with the study (Miles & Huberman, 1994). Analysis during the collection phase also helps the researcher develop analytical question that are relevant to the study to direct the research.

Wolcott (1994) maintains that there are three major approaches for organizing and reporting data--description, analysis, and interpretation. "Description addresses the question, 'What is going on here?'....Analysis addresses the identification of...how things work....Interpretations addresses [the question] 'What is to be made of it all'" (p. 12). Data collected from this study will be organized by searching for emerging themes based on the situated cognition theoretical framework.

Categories will be determined using the following guidelines: (a) categories that reflect the purpose of the research; (b) categories in which all relevant items can be placed; (c) categories are mutually exclusive; (d) categories are independent; and (e) categories that originate from a single classification basis (Merriam, 1988).

Findings

I am currently completing a preliminary study of this research topic. By beginning with a preliminary study, I am able to select participants to observe and interview to assist me in identifying areas I may have overlooked. A preliminary study also assists the researcher in testing and refining questions associated with the study. In addition, a preliminary study allows me to develop a rapport with the participants and to "establish effective communication patterns" (Janesick, 1994, p. 213).

Preliminary findings are promising and interesting. I have found evidence of mentors using dimensions associated with a cognitive apprenticeship environment (see Figure 1). Specifically, mentors use modeling, coaching, and scaffolding with the youth apprentices to assist them in learning specific facts or procedures. I have also see and heard how the mentors gradually increase the difficulty and variety of tasks in order to provide the youth apprentice with a broader and more thorough understanding of the job and the work environment.

I have data to support each of the research questions posed in this study. Findings that support question #1 include the following: mentors provide apprentices as many experiences as possible to help them discover and explore all aspects of a job; mentors help youth apprentices gain confidence in their abilities by allowing them to apply their knowledge; and mentors model and demonstrate social skills needed to deal with other employees and customers.

Findings that support question #2 include: mentors use a variety of approaches to teach the youth apprentice; mentors provide youth apprentices with experiences that require them to figure it out for themselves; mentors answers questions asked by youth apprentices; mentors show, explain, and then observe the youth apprentice use their knowledge; mentors allow youth apprentice to trouble shoot to reason out the problem independently; and mentors explain why things are done a particular way or why a tool is used or not used in a particular way or circumstance.

Findings that support question #3 include: apprentices believe their mentor will help them if they don't know how to perform a particular task; and mentors recognize a youth apprentice's gains in confidence and abilities.

Findings that support question #4 include: most youth apprentices believe their work experience is challenging and interesting, with many opportunities to learn new things; and students feel that their work experience has been good for exploring different careers of interest.

In a survey conducted by Jobs for the Future (JFF), more than half the students believe that they spend more than half their time at work learning new information or practicing new skills. In addition, most youth apprentices describe their workplace as follows: a) a place where people work hard; b) more fun than school; c) a place that encourages the development of good work habits; d) more important than school; e) a place that is preparing them to advance to a better paying job; f) a place where they can work upon completion of high school; and g) a place where work is related to areas studied in school.

Data from interviews with management, mentors, and youth apprentices in the business revealed that all felt that on-the-job experience helps youth apprentices develop the skills needed to determine the magnitude or extent of a problem and that students were able to use knowledge learned on the job in school. In addition, the youth apprenticeship program helps the students gain a better understanding of what to expect on the job and in the work environment through hands-on experiences.

Document analysis of evaluation reports for youth apprentices reveal that the youth apprentices gained proficiency in most skills from the first reporting period to the second reporting period. Specifically, the evaluations show evidence of student gains in the following areas: use of standard test equipment, communications (written and oral), general office procedures, ability to perform a wide range of duties, ability to work independently, and problem solving.

Other themes discovered that were not originally considered to be an issue include employers concerns about the following areas: immaturity, work ethics, ability to perform a wide range of tasks, and knowledge of basic skills. In addition, youth apprentices expressed that they learned a wider variety of tasks on the job than at school.

Recommendations and Conclusions

To gain insight into the nature of learning in a workplace, more research should be conducted. Although it is assumed that learning has been accomplished in our schools, research now suggests that learning solely in a classroom may not have significant relevance or meaning for today's youth (Raizen, 1989). Youth apprenticeship programs may be one alternative form of instruction that assists students in becoming productive adults by providing them with a relevant, meaningful, and contextual education by linking school and work.

Although this study is not final, emerging themes and findings appear to support the effectiveness of youth apprenticeship programs for providing students with a contextual and relevant education. As more data is collected, not only will more themes will emerge, I will also be able to determine additional considerations regarding further data collection (i.e., selection of participants and additional questions,).

Preliminary findings suggest that changes in the educational delivery system and adjustments in instructional techniques, such as those used in youth apprenticeship programs, may have positive effects for students, schools, and businesses. These positive effects include providing students with work experience, guided learning opportunities, a structured linkage between school and adult life, and an integration of academics and authentic work experiences (Stern, 1992). By exploring the experiences and feelings of management, workers, mentors and youth apprentices toward youth apprenticeship programs, I am able to determine if participants believe these programs are effective.

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Figure 1

Dimensions for Cognitive Apprenticeship Environments

CONTENT	METHOD	SEQUENCING	SOCIOLOGY
Domain Knowledge Facts & Procedures	***Modeling*** Students learn by observing	***Increasing Complexity*** Increase difficulty gradually	***Situated Learning*** Reflects real world situations
Heuristic Strategies Tricks of the Trade	***Coaching*** Providing hints to students	***Increasing Diversity*** Increase variety	***Community of Expert Practice*** Communication of expert procedures
Control Strategies Metacognitive Skills	***Scaffolding & Fading*** Teacher support lessens	***Global to Local Skills*** Focus on whole before parts	***Intrinsic Motivation*** Learning for personal reasons
Learning Strategies How to Learn	***Articulation*** Students verbalize learning process		***Cooperation*** Students working together
	Reflection Students compare performances		
	Exploration Student's own problem solving strategy		

Note: Figure adapted from Teaching Advanced Skills to At-Risk Students (p. 228), by B. Means, C. Chelemer, and M. S. Knapp, 1991, San Francisco: Jossey-Bass. Copyright 1991 by Jossey-Bass.

Improving the U.S. System of School-to-Work Transition for Youth and Young Adults:

A Consideration of the Federal STWOA

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Improving the U.S. System of School-to-Work Transition

Much of the current discussion regarding school to work transitions uses language like "high performance workplace" (U.S. Congress-HR 2884) or "high-skill, high wage" workplace (National Center on Education and the Economy, 1991). Finch (1993) offers a useful description of the direction in which the workplace is evolving and argues it is for this workplace we must prepare our youth. This *high performance workplace,* he describes is characterized by employees who make significant decisions regarding production and managers who are facilitators and coaches.

However appealing a high performance workplace might be as a site for adolescent development, the stark reality is that not all workplaces, in fact few workplaces meet that definition. More problematic still is that much of the work that needs to be done in our society or that will be available neither requires high skill nor pays high wages.. As point of fact, most of the net new jobs being created in our economy do not meet these criteria (U.S.D.O.L, 1993). This does not mean however, that the workplace is not a viable educational venue for youth nor that a focus on developing high performance skills in our youth is not a desirable end. The issue is, which workplace do we consider, can we consider, in constructing work-based learning opportunities.

Learning in The Workplace

Differing realities: local economic and employment conditions, geographic constraints, organizational patterns, as well as social and cultural influences must be taken into account as schools attempt to foster smoother transitions for youth into the workplace. One reality that must be accommodated is the nature of the evolving work opportunities. While high skill-high wage jobs are certainly desirable as targets for employment, there may not be a sufficient quality high skill workplaces that can provide work-based learning opportunities. This dilemma is a direct result of changes in nature of work as we move into the 21st century: Higher productivity with fewer workers.

A second reality is that in some communities, there are few work-based learning opportunities for youth because there are not enough jobs for adults. This problem is particularly acute in the urban core of many cities. This condition exists despite the need for "work" to be done: houses in disrepair, crumbling infrastructure, meeting the needs of children and elderly - the list is quite extensive. The dilemma is that much of the work that needs to be done in our urban areas does not attract the sort of private investment necessary to create traditional private sector jobs.

A school-to-work opportunities system cannot be restricted to those occupations meeting an elusive definition of "high wage." Such a plan severely limits the likelihood of expanding a work-based learning system beyond a few demonstration programs . Such restrictions deny urban core youth and our rural youth, the possibility of alternative work-based learning where they can develop the skills required for tomorrow's workplace.

Rather than restrict work-based learning opportunities, three possible workplace learning opportunities are proposed: the high-skill, high wage workplace; the community building workplace; and the capacity-building workplace. Each offers the potential for work-based learning where young people will be able to develop skills needed to work in high performance workplaces and that meet the requirements of broad clusters of related occupations.

The High Skill, High Wage Workplace

Even as the national economy continues to grow and most major corporations are doing well, they are not necessarily generating net new jobs. Typically large business have achieved efficiency and productivity through considerable "downsizing." In fact, recent statistics suggest that Fortune 500 companies have been shedding, not adding workers for the past decade in order to become more competitive in the global market.

The definition of "high skill, high wage" occupation has proven elusive, (in one state it has been operationalized as any job that pays at least double the minimum wage). A number of pilot programs, primarily a result of youth apprenticeship efforts, have targeted machining, medical technology, and printing and graphics. For some youth, there will be opportunities for work-based learning in these and other capital equipment-intensive industries. COOP or its look-alike companion, youth apprenticeship offer one structure for connecting school to work in these environments.

In addition to existing "high skill" workbased learning opportunities, there is the potential for school-business partnerships to be formed that might focus on high skill occupations not presently in existing in any great number, but for which predictions assure us of their coming such as telecommunications. Partnerships could evolve between businesses representative of such future industries and schools. In this approach, schools could foster the creation of what labor secretary Reich has called, "symbolic-analytic zones" (1992) and build a workforce for the future. In this approach, partnerships with local community development corporations (CDCs), enterprise zones, and other economic development initiatives will be developed to create pools of skilled workers and attract new work opportunities to the community. These partnerships may take the form of incubator centers such as sponsored by the Fox Valley Technical College in Wisconsin. In these centers, students would work in internships or COOP like arrangements with small startup entrepreneurial firms.

Community Building Workplace.

This orientation begins with the assumption that in the process of building our nation's economic capacity, we must also build or re-build, where necessary, our local communities. Through this approach, schools become an economic partner, and economic engine for local communities. "Community Building" employment opportunities are proposed as an important part of a school-based and work-based learning opportunity system. By using the community as a "text-book," as developed by the Cambridge-Rindge Vocational School in Boston or by the Rothsay High School in Minnesota, new school-community based enterprises will be created that meet real local needs for manufacturing and services.

This is a useful way to combat what Wagner (1992) called inert knowledge: to have students apply the new knowledge or skill in a problem-solving context. This approach is also consistent with Dewey's (1959) argument that students should be brought into contact with more adults and other students to facilitate social learning: attitudes or predispositions to behavior. Social learning is developed, according to Dewey through interacting with the environment and through modeling.

Through creation and operation of these enterprises, students can develop technical skills, learn "all aspects of the industry," develop latent entrepreneurial talent, and through more contact with adults, develop social learning as well. One such example is the Phantom Bike Shop in Minneapolis. Here a local non-profit organization working in partnership with the City of Minneapolis, the University of Minnesota, the University of St. Thomas and local businesses have created an opportunity for disadvantaged adolescents to establish their own business that also contributes to local economic development.

We also find examples of this approach in Phoenix, Arizona (housing rehabilitation), Baltimore, Maryland (restaurant and food service), Cambridge, Massachusetts (transportation-energy conservation), and Milwaukee, Wisconsin (individual entrepreneurial activities), and Rothsay, MN (hardware and grocery retailing). School sponsored economic development and enterprise incubation could be the second focus of a comprehensive work-based learning system. The opportunity to create enterprises as a focus for learning exist in virtually all communities.

Capacity Building Workplace.

The third option in this system is "Capacity Building Work." This orientation acknowledges the realities of today workplace opportunities. Most young people are confined to what has been called the "youth labor market." This secondary labor market is characterized by jobs that require little formal education, little in the way of specific skills, and offers little in the way of pay or benefits. These are the fast food, retail, and lower level service jobs the economy is producing at record rates. This is also where most kids will find initial employment. The educational question is how to make these work experiences educative.

How can schools take advantage of this lived reality of young people? Can real learning take place in routine, lower level work? One option is to recognize the learning that can take place in this context and shape these work opportunities to better fit the broader societal goals made explicit in the Goals 2000: Educate America Act and the School-to-Work Opportunities Act of 1993. How can these workplaces and the jobs they offer be enhanced to provide academic, occupational, and social development opportunities for young workers and improve profitability of participating firms?

Three recent studies have hinted at the value of enhancing workplaces by improving the job quality of youth jobs. Mortimer (in-press) found a positive association between job quality and psychosocial development and other developmental outcomes. Stern, et al (1994) and Stone, et al (1992) in a series of analyses found higher job quality to be associated with participation in vocational cooperative education and participation in COOP to be positively associated with a variety of social, academic, and occupational development dimensions. A proposed NCRVE study, *High Performance Learning in the Fast Food Industry*, will more closely examine these and enhanced productivity issues during 1995 and 1996.

Existing Strategies for Connecting School and Work

At present, there are at least eight strategies for connecting school based learning to work based learning. These include job shadowing, school-based enterprises, internships, cooperative vocational education, youth apprenticeship, and adult apprenticeship. One way to conceptualize the similarities and differences among these strategies is to view each as a relationship between time spend in SBL and time spent in WBL (see figure 1). Each is briefly described below.

Job Shadowing

Job shadowing has a long history of use in career education, vocational education, and other programs designed to acquaint young people with the workplace. In some instances, students will simply shadow or follow an adult worker around for a period of time, usually less than a day. In other instances, students combine job shadowing with academic class requirements and may engage in work-based research for an English, history, or science class. In still other instances, students may be rotated through a particular industry, or among a variety of industries or career opportunities. Regardless of its use, shadowing tends to involve small amounts of time actually learning in the workplace.

Internship

According to Hartley (1983), an internship is a one-time, short-term placement, directly related to participants' academic professional goals, which is institutionally structured and monitored. Internships typically occur toward the end of participants' academic/professional training. Students are usually not paid, or are offered only small stipends. Typically, students' participation is project-oriented and observatory in nature, with little on-going connection to their schools or teachers during their internships. In many two year occupational programs, students spend the last academic term (quarter or semester) in the workplace.

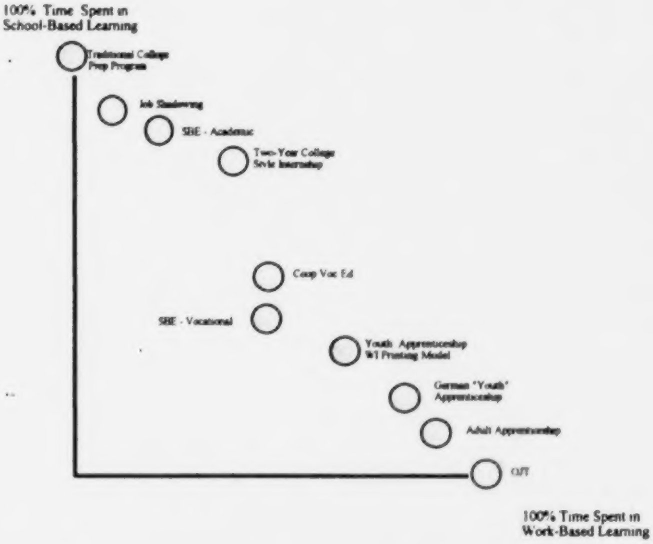
100% Time Spent in School-Based Learning
Traditional College Prep Program
Job Shadowing
SBE - Academic
Two-Year College Style Internship
Coop Voc Ed
SBE - Vocational
Youth Apprenticeship WI Printing Model
German "Youth" Apprenticeship
Adult Apprenticeship
OJT
100% Time Spent in Work-Based Learning

Figure 1. *Relationship between WBL and SBL in Programs Designed to Connect School to Work*

Youth Apprenticeship

Numerous attempts have been made to define youth apprenticeship. Some definitions deal with overall goals and vague aims of youth apprenticeship, while others show an attempt of detailed descriptions. It is in the latter that we find disagreements on working/ education ratio, as well as on weighing the importance of key participants.

Most authors agree that youth apprenticeship programs are designed to link education and work and give young students on-the-job training while they are still in school. Roditi (1991) explains the concept of youth apprenticeship as:

> 'apprenticeship because at the heart of these systems is the integration of school and workplace learning and an emphasis on learning-by-doing under the tutelage of experts; and youth, because these systems address the personal and professional development of young people' (p. 3).

Disagreements on whether youth apprenticeship represents an educational or a working experience are evident throughout the existing literature. One view sees the program as 'extension of 2+2 tech prep models to include work-based learning opportunities' (Kazis, 1991), while the other considers youth apprenticeship to be a preparation for a traditional, or registered apprenticeship program. As programs begin to develop, we see a wide variation in the amount of time spent in WBL in relation to the amount of time spent in SBL. In an early Wisconsin program, students spend three days in the workplace and two full days in school-based learning.

School-Based Enterprise

School-based enterprise (SBE) programs have come into existence for a variety of reasons, but can generally be ascribed to one of four reasons: to teach entrepreneurship, provide application of classroom developed skills, enhance social and personal development, and to support economic development. Within these four proposes, we also find the driving paradigm to be either an "academic" approach or a "vocational" approach.

Much of the evidence suggests that the intent to impart entrepreneurial skills is a primary factor. Entrepreneurship courses are viewed as a means of giving students a practical insight into the curriculum. Kuratko (1989) observed that the number of colleges and universities offering courses related to entrepreneurship reached 3000 in 1987. But the interest in teaching entrepreneurship exists at the secondary level as well (Stone, 1980). The initial objective in most of these programs is "to develop basic skills relating to starting and managing a small business" (McFarlane 1981,p.138).

The work experience gained through SBEs takes on even more importance when we realize that of today's entrepreneurs, 40% of them are high school graduates only and another 26% have some college (Ashmore, 1988). And they are often young. Thus, the school based enterprise experience is an opportunity for potential entrepreneurs to gain experience in operating a small business. Indeed, Buzzell (1989) argues that entrepreneurship should be center stage in all vocational education.

The application of classroom skills was highlighted by Rallo (1986) in his discussion of several SBE programs where the primary emphasis was on providing an opportunity to practice the use of class taught skills. Stone (1980) discussed the application of marketing and business skills in the operation of a school store. And Cooper (1988) described the application of basic skills in a middle school repair shop enterprise. Stern, Stone, Hopkins, Crain, and McMillion (1994) documented examples of English classes writing and marketing books, Economics classes conducting business climate surveys, and advanced science students creating "new knowledge" in functioning science labs.

A third objective pursued through SBEs is personal and social development. Moskowitz (1982) described at some length, a program using a school store SBE in a drug rehabilitation program. Stern, et al (1994) described a diner operation operated by adjudicated youth in a major urban area.

A fourth objective found to be associated with SBEs was economic development. Nappi (1986) described a college program that he felt was easily transferrable to a secondary setting where business students adopted a small town and went about a series of activities designed to rejuvenate a declining downtown. Stern, et al (1994) described such a project in Rothsay Minnesota where high school students reopened a closed lumber yard (as an advanced accounting project); acquired the local grocery store as it was going out of business; and have considered other enterprise ventures as ways of both reinvigorating the economy of the town and providing real-world learning opportunities for adolescents.

Academic driven SBEs tend to use more SBL and provide less time for WBL. By contrast, vocationally driven SBEs tend to provide students more time in the enterprise (WBL).

Cooperative Education

Cooperative education, a method of instruction imbedded in the American education system for almost 100 years, can be defined as 'the integration of classroom theory with practical experience under which students have specific periods of attendance and employment' (Stone & Wonser, 1990). A more formal, extended definition is provided by the National Commission of Cooperative Education (in Ricks, Gyn, Branton, Cut, Loken and Ney, 1991). High schools and two-year colleges usually operate their co-op programs on a parallel basis (school in the morning and work in the afternoon), while baccalaureate programs, and some two-year programs usually operate on a full-time, or alternate basis (full-time schooling and full-time work). The two-year community college programs presently represent the biggest growth potential in co-op programs. According to the recent figures (General Accounting Office, 1991) however, only 8 percent of high school juniors and seniors participate in co-op programs, while in community colleges less than 3 percent of all students take a co-op credit. Such low numbers, Grossman, Warmbrod and Kurth (1988) rightly conclude, limit the impact of co-op education in the postsecondary environment. The same can be concluded for the secondary programs.

The term "cooperative education" means a method of instruction of vocational education for individuals who, through written cooperative arrangements between the school and employers, receive instruction by including required academic courses and related vocational instruction alternation of study in school with a job in any occupational field. The two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and to his or her employability.

An important issue related to cooperative education programs is the role of employing firms. As more employers become formally involved in connecting school to work, there is a need to identify internal obstacles they encounter and how they can be overcome. A very real potential problem is that firms where learning is an integral part of the job may have low turnover and therefore few openings to offer student-learners. By contrast, other firms that do not reflect the characteristics of a "learning organization" and are characterized by high turnover, may therefore seek out student-learners to augment their labor pool (Stone and Madzar, 1994).

Double Integration: A Strategy for Improvement

Explicit in the current federal legislation is the integration of academic and vocational curriculum and the integration of School-based Learning (such as Tech Prep) and Work-based learning (such as coop; youth apprenticeship, school-based enterprise, shadowing, internships, and the like). Taken as a whole, the proposed efforts constitute a structure for the systemic reform of adolescent education. We might call this a *double integration* model (Figure 2): Integrating academic and vocational SBL with WBL.

Integrating Academic and Vocational Learning

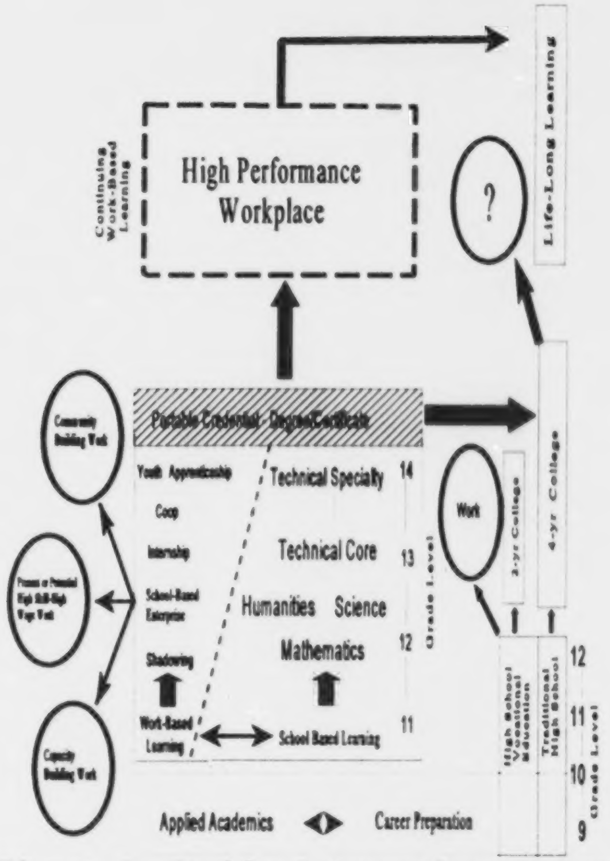

Figure 2. *Double Integration*: Occupational and Academic Learning + School-Based Learning and Work-Based learning

Integrating the curriculum is part of many TechPrep efforts, charter schools, youth apprenticeship pilots, academies, and school-based enterprises. There are a myriad strategies for integrating curriculum. The simplest is to infuse more academic learning into vocational classes or more vocational learning into academic classes. The more complex strategies require reorganizing entire schools into career academies or career magnets. This is the first kind of integration in a proposed model of school reform.

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Integrating SBL and WBL

Present school reform efforts are seeking to provide more formal links between schools and the workplace as a strategy for improving the transition of youth into the adult role of productive citizen. Traditional models of connecting school-based learning with work-based learning include cooperative vocational education, registered apprenticeship, school-based enterprise, and internships. While quality varies widely among these approaches, each offers potential for effectively connecting what is learned in school to what is learned on the job. This is the second kind of integration in a proposed model of school reform: integrating school-base learning (SBL) and work-based learning (WBL).

As shown in Figure 2, the school-to-work transition process is built upon a tech-prep, four year experience beginning in what is now 11th grade. As the student moves through the four years of focussed learning, the time spent in work-based learning increases while the time spent in school-based learning decreases. The three possible work-based learning options are shown in ovals on the left. As the curriculum is integrated internally for the four years, the progressively intensive work-based learning is integrated with the school-based learning. This experience concludes with a portable credential that must differentiate the successful student in the labor market. Current credentials, e.g., two year AAS, AS, or AA degrees may be inadequate to the task. What will need to be created is a credential with the occupational power of a registered apprenticeship and the academic power of a college-transfer degree.

The model is built on the assumption that the rigor of the four year, double-integrated program is sufficient to permit lateral movement into related four year degrees - without this, any school-to-work program is doomed to become marginalized in the public schools. There is also the assumption of the need for life-long learning where future workers will move back and forth between work-based learning and more formal school-based learning.

Barriers to Double Integration

Recent experience in implementing STWT programs at a localized level suggest a number of probable barriers to double integration. Prominent among these are: (1) continued, meaningful and expanded involvement of the business community, (2) resistance to new methods of education, such as curriculum integration, by school-based educators, (3) uneasy relationships between secondary and postsecondary educational institutions, (4) a lack of an identifiable credential that would provide an appropriate signal to the labor market that an individual is truly different (ie. better prepared) than another young adult. A side bar to this problem is the lack of a portable credential between and amongst different school systems. There are sure to be additional barriers encountered as states move to implement a state-wide system.

Best Practice in combining SBL and WBL

The following recommendations are based on two recent NCRVE studies (see Stone, Madzar, Cagampang, and Smith, 1994; and Crain and Stone, 1994).

Best Practice in Youth Apprenticeship

- Paid work experience and guided worksite learning
- Integrated vocational and academic curriculum
- Coordinated SBL and WBL
- Articulated secondary and postsecondary learning experiences
- Credential at conclusion
- 3-4 years in duration

Best Practice in Cooperative Vocational Education

- Training Agreement
- Training Plan
- Coordinator who teaches related class
- Placing students (not accepting those who already have jobs)
- Monitoring students on the job
- Related instruction

Best Practice in Working with Mentors

- Recruited through organizations, not on a one-at-a time basis
- Concentrate on youth who need adult connections
- Clear goals for mentor and mentoring relationship
- Continuing staff support for mentors
- Work or school context is required

Best Practice in School-Based Enterprise

- Balance the focus on production with a focus on learning
- Rewards and sanctions should be used to promote quality work
- Focus training on marketing, customer satisfaction, job quality, marketing research, and communication skills.
- Adult supervisors should mirror a real workplace and treat students as adults in the work setting
- Develop an advisory committee for the operation of the enterprise

Best Practice in Double-Integrated Programs

- Use of industry lecturers (early results show a strong relationship between this methodology and gains in reading and math scores in the 9th and 10th grade).

- Creating vocational cohorts of students to study academic subjects integrated with vocational focus (integrated curriculum in computer applications is linked to good scores in math and reading, and low absenteeism)
- Set high standards in the classroom and the school
- Mirror collegiate models of teaching professional/occupational core

Summary

If work and working as a part of the formal educational process for adolescents is to support middle class values as Levitan (1992) has argued, then society must demonstrate persuasively that rectitude pays. Further, it is argued, that society has an obligation to make obstacles surmountable and the prospects of success believable. Just the opposite is happening. There are disincentives at work: lack of access to meaningful employment, limited payoff for playing by the rules, lack of access to schools that offer necessary preparation for postsecondary education, and a lack of availability of appropriate programs within the schools. Carlson (1990) among others notes that the typical work-bound urban high school graduate faces a gloomy prospect of a shrinking work opportunities in the primary labor market. More generally, society at large has created perverse incentives to teen pregnancy and poverty is a real obstacle to marriage and family formation.

Schools cannot create long-term real employment for youth. Through double integration, using COOP and other models of connecting school to work, schools can help students develop the knowledge and understandings necessary for success in the evolving high performance workplace. It remains for other societal institutions to create the hope needed by young people to make all the effort seem worthwhile.

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RECENT NATIONAL STUDIES AND REPORTS ON EDUCATION AND ECONOMIC REFORM: SOME INITIAL IMPLICATIONS FOR CURRICULUM STANDARDS IN VOCATIONAL EDUCATION

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ABSTRACT

Since the early 1980's, national educational reform has been an issue in the forefront of public policy. Reform of students' classroom experience and the skills produced therefrom has been critically examined. This examination by educators, business, and governmental agencies has been documented in numerous national reports. Often, these reports identify a multitude of desired student skills or outcomes that are unique to each study. Similarly, recommendations that accompany those reforms are also specific to each report. As a result, numerous skills are identified, varying recommendations are made, and any consistency between reports is often lost. Hence, policy makers and administrators see little commonality in regard to student outcomes on which to develop or build education for work policy or programs. Potentially, this lack of commonality curtails the development of curriculum standards reflective of common skills needed by all students. This study reviews several national education and economic reform reports and identifies consistent elements between them.

The reviewed studies/reports are taken from the period of 1988 to 1992, and their contents are compared and contrasted to the SCANS Report of 1991. This report was chosen as the benchmark because of its scope of occupational and personal student skills, completeness, and specificity of skill definitions.

The study methodology included the development of a matrix to compare and contrast the competency and skill recommendations of the studies. The SCANS foundation skills and competencies were used as a criterion in relation to the content of the selected national studies. The content of the studies was examined to evaluate whether SCANS skills and competencies were included (either through implication or explicit discussion) or excluded. From this review, a set of observations and recommendations were formulated based upon a matrix analysis. The analysis produced some preliminary findings:

1. The reviewed national studies cover the SCANS Skills, particularly the basic skills, in substantial detail. However, these studies/reports give limited attention to discussion to the SCANS Workplace Competencies.

2. Report sponsorship appears to have some affect on the type of skills included in the examined national reports.

3. The SCANS Report does not include career development skills and/or competencies that are included in several of the reviewed national reports.

As the nations' educators seek to implement the new national education goals and the forth coming Industry Skill Standards, the relationship of these standards to curriculum content and alignment must be carefully considered. By finding consensus across education and economic reform studies emphasizing workforce skills, significant contributions can be made to the development of curriculum standard. Such analyses are important to building valid, reliable, and non-redundant curricula for the full spectrum of work-related education programs.

INTRODUCTION

As the educational community readies itself for the 21st century, many of the reform initiatives that will carry it into the new century focus on the training and retraining of America's workforce. The driving force behind these initiatives is the national perspective that students of the 90's are not receiving and/or learning the competencies/skills needed for the global workforce projected for the next century. In response to this issue, education, business, industry, labor, and governmental agencies have all identified certain skills (i.e., outcomes and competencies) to prepare students as successful workforce members. The corollary effect for the nation and the students themselves, is not only educational betterment, but technological advancement and economic survival. As a result of this identification activity and related student skill reforms (e.g., Tech Prep, Competency-Based Education), a plethora of national studies/reports documenting those desired skills and positing structural change (i.e., educational and economic) have been produced.

One such study, *What Work Requires of Schools - A SCANS Report for America 2000* is widely considered as a seminal document in workforce development circles. Because of this distinction, SCANS is used in this inquiry as a criterion instrument against which other reviewed studies are contrasted and compared. The SCANS skills are both educational and personal, with definitions accompanying each. The completeness and definitions of SCANS offers some consistency when comparing terms and skills of various studies to the SCANS study itself.

Within the scope of this report, several educational and economic studies from 1988 to 1992 have been documented into one concise matrix. These studies are analyzed in relation to the SCANS Report. The purpose of this matrix and its subsequent analysis are two-fold:

1. The matrix allows educators, business, industry, and governmental leaders to examine the commonalities, differences, and scope of specific skill studies in one document. The reviewed studies are national in origin, and include identified educational and personal skills.

2. Through the matrix, an analysis can be completed to establish a baseline of general skills which then could be used as a foundation for national vocational education curriculum standards. Currently, vocational education does not have widely adapted national standards for curriculum and instructional materials. A common core of general skills would serve as a foundation to future curriculum and/or enhancing existing curriculum in the areas of content and pedagogy.

With a common core framework in place, vocational education/education for work policy can concentrate on identifying an essential set of skills which provides a common thread to any developed curriculum. In turn, education for work curriculum is systemically enhanced by the reinforcement and connection of relevant student learning within and across programs, grade levels, and schools.

PURPOSE OF THE STUDY

The purpose of the study is to enrich the existing knowledge pertaining to national education and economic reform studies focusing on education for work skills. This enrichment will emerge from a synthesis that compares and contrasts the skill content of the identified studies. The primary objective of this inquiry is to complete an analysis of the reported skills, from which possible implementation issues can be discussed in relation to the design of education for work curriculum standards. In light of the current milieu of education and economic reform studies whose content are founded on the identification of "desired" education for work skills deemed "essential" for successful entry level workers, examination should be pursued that codifies these varying perspectives for sustainable and consistent national policy. In particular, this initiative could be beneficial to policy development influencing the evolution of education for work curriculum standards.

Statement of the Problem

An abundance of national education and economic reform studies have directed their conceptual focus toward positing various workforce skills believed to be vital for worker training/education. Building on this notion, many of these studies suggest that as students must experience the identified skills through their own education, once employed, as workers, they can more directly and positively participate in the economy. With these many studies, however, relatively little attention has been given to examining the identified skills in relation to the formulation of education for work curriculum standards. Without a generally consistent notion of what actually constitutes essential education for work skills that are applicable to all students, how does quality curricula emerge that reflects those skills? In the absence of that curriculum (and the curriculum standards that guide its development), the national education goals and various education for work skills currently be posited by federal policy have limited basis for truly affecting student learning. With national policy envisioning education for work skills, curriculum standards can more effectively address a positive interface between the skills and curriculum design, content, pedagogy, and student learning. Envisioning this successful interface and connection is critical for the ultimate beneficiaries of education for work programs: the learners who will live and work in a highly complex, interdependent, global society.

METHOD

Selection Criteria

There were several criteria employed in the selection of education and economic reform studies used for the purpose of this inquiry. First, only recently published studies were chosen for analysis. Several studies published between 1988 to 1992 were examined. Second, the studies selected were national in scope with an emphasis on affecting national education /training policy. Another imposed constraint on study selection was the study/report be authored by some nationally recognized agency, panel or commission. Last, the studies selected focused on skills identified as key to the education of persons contributing to a productive work force. Studies calling for educational reforms which were not based on skills or competencies associated with work or economic activity were excluded from the analysis.

Data Analysis

Content Analysis

The research methodology employed for this inquiry was a content analysis. Specifically, a comparative matrix analysis was utilized for comparing and contrasting the skills content of the selected studies. According to Berelson (1952, p.18) the "content-analysis technique may be any form of communication, usually [performed on] written materials...". With such an analysis, data currently exists and need not be generated; although new knowledge will be produced through some type of examination or contrastment (Borg and Gall, 1989). The studies selected for this inquiry provide the contextual evidence for the content analysis.

The analysis was accomplished by developing a matrix detailing the identified skills of each of the selected education and economic reform studies. With the SCANS Report serving as a baseline criterion, skills and competencies recommended in the selected studies where subjectively coded as "explicit" or "implied" in the SCANS taxonomy of foundational skills and competencies. The author was the coder in this process. While the use of a single coder probably enhances the internal reliability of the analysis, it also creates a number of problems that, in turn, limit the validity and generalizability of the recommendations at this juncture. Future work on this study will involve having multiple raters using a tighter definition for "implied" designations. However, for the purpose of this inquiry, the definitions of "explicit" and "implied" are the following:

Explicit:	Skills of the examined education and economic reform studies are phased in the same wording as the skills/competencies of the SCANS Report.
Implied:	Skills of the examined studies are similar to, or parallel to those documented in the SCANS.

For replicablity, it is apparent that different definitions for these two terms can certainly have an impact on how the data coding takes place. Similarly, if others chose to use the stated terms, the possibility exists that the same interpretation may not occur, hence, the matrix may take on a different caricature. In order for a similar replication of the data analysis to take place, it is imperative for these two definitions to be very clear. Even then, coder subjectivity may enter into the analysis. For a partial solution, two or more coders can be utilized to cross-analyze the data in regard to skill comparison.

Further, the inclusion of recently published studies (including some of the industry skill standards which are now being released) will provide a broader basis for affirming an emerging national consensus about critical workforce skills and knowledge.

Data Reliability

The "Skills Matrix" is included to facilitate the identification the type of skills and competencies distinguished by various national workforce studies. Using this tool, one can then reflect upon a number of considerations. First, the methodological approach of using the SCANS as a baseline criterion study allows for the contrast and review of the skill related content of eight national workforce reports/studies to the SCANS Report. SCANS was selected for this purpose for the following reasons: 1) the report was generated by a well recognized sponsor (U.S. Department of Labor) and thus, appears to have good face validity; 2) SCANS produced an extensive follow-up study by a broad-based commission of employers; 3) within the report itself, some empirical analyses of jobs and industries were conducted to validate the skills and competencies; and 4) the report also contains a well defined set of terms which adds clarity to the work.

Second, by contrasting these skills, a simple analysis can document how these workforce reports/studies relate, incorporate and/or differ in their portrayal of desired skills and competencies. From this analysis, a set of generalized skills could be posited as a foundation for the of development of nationally focused vocational education curriculum standards. According to Hagens and Crohn (1986, p. 7) standards of this magnitude need to be based on "detailed, skills-oriented, common learnings curriculum". The process of selecting these skills could be designed to include those that are consistently documented across the matrix (e.g., Basic Skills), and perhaps consider skills that are consistently omitted as well (e.g., Career Development). Additionally, a national may emerge to build common definitions and standards of performance for skills and competencies. If meaningful dialogue is to occur among policy makers, curriculum developers, and teachers which focus clearly on core skills, and in tandem, appropriate advanced technical skills are to be specified for the full range of American industries, then some degree of consistency when identifying and defining skills may be essential for this dialog to produce significant results.

Last, the matrix categorizes the eight national studies by publication date, sponsoring agency, and type of skills desired. In reviewing the national database and literature for this study, it was apparent, that limited effort had been made to categorize in some format the array of workforce related studies which potentially impact education for work initiatives.

Limitations

There are several limitations to this study. As mentioned previously in the analysis section, coder subjectivity is a potential limitation. Further work is anticipated with this study, in which a modified-delphi panel approach will be utilized to provide analysis and coding to the selected studies. Second, some of the included studies (i.e., *America's Choice*, *America 2000*, and *National Education Goals of 1991*) appear to provide policy rational for structural changes, rather than specific skills/competencies per sae. Although these education and economic policy studies imply the importance of the "basic skills", their primary concentration seemingly focuses on the greater policy picture. Finally, a number of the selected studies from this review did include various skills/competencies that were not revealed in the SCANS Report. Thus as the benchmark study, the SCANS Report also appears to have some degree of weakness.

LITERATURE REVIEW

The reviewed literature contained in this study were gathered through the ERIC database of educational resources. The resulting collection of studies and reports were published between 1988 and 1992. In choosing this particular time period it was hoped that the most timely, and hence, the most relevant material would be reviewed and analyzed. The studies and reports contained herein (Table 1, p. 6) are national in scope, with authors representing the private sector, education, government, business, industry, and labor.

TITLE	SPONSOR(S)	PERSPECTIVE REPRESENTED	FOCUS
1. America and the New Economy (1991)	American Society for Training and Development; US Dept. of Labor	Business	Five characteristics of the new economy (market standards, technology, economic lifecycle, organization and management, and jobs).
2. Workplace Basics: The Skills Employers Want (1988)	American Society for Training and Development; US Dept. of Labor	Business	Seven skill groups needed for persons to successfully enter the workforce (organizational effectiveness, self-esteem, creative thinking, listening and oral communication, 3 Rs, and listening).
3. What Work Requires of Schools--A SCANS Report for America 2000 (1991)	The Secretary's Commission on Achieving Necessary Skills	Business	Strategies to achieve necessary workforce skills (skill definition, proficiency levels, proficiency assessment, skill dissemination).
4. Measuring Progress Toward the National Education Goals: Potential Indicators and Measurement Strategies (1991)	National Education Goals Panel	Education	An objective of Goal 5 states that the workforce receive training on new skills and knowledge through a variety of opportunities.
5. America 2000 (1991)	U.S. Department of Education; Office of the President	Education	A question and answer publication on the implementation options through a variety of opportunities.
6. America's Choice: High Skills or Low Wages! (1990)	National Center on Education and the Economy	Business	Offers a system of national standards and assessments.
7. Building a Quality Workforce (1988)	U.S. Depts. of Labor, Education, and Commerce	Business and Education	Strategies for education and business to consider in order to build a quality workforce.
8. Workforce 2000 - Work and Workers for the 21st Century (1988)	U.S. Dept. of Labor	Business	Four work-related trends are identified (economic growth, decrease of US manufacturing, diverse workforce, and higher-level skill requirements.
9. Education Counts: An Indicator System to Monitor the Nation's Educational Health (1991)	National Center for Educational Statistics	Business	Identifies six indicators to improve educational data collection. Two indicators, learner outcomes and educational and economic productivity, relate to educational training for the future workforce.

Workforce Skill Related Studies and Reports

A collective monograph, *America and the New Economy* (Carnevale, 1991), defines and discusses the "new economy" from the perspective of U.S. employers and employees. In general, the report focuses on the influence of changing competitive standards and the resulting transformation of the workplace. In order for this transformation to occur, the report offers an alternative purpose of "scope of action" that must be embraced (from the perspective of its author). In this action, five characteristics of the "new economy" are presented: 1) market standards; 2) technology; 3) a new economic life cycle; 4) organization and management; and 5), jobs. These five characteristics center on changing skill dimensions that involve: departing from concrete to abstract skills; moving from specific to general skills; integrating self-management and interpersonal skills; and converging skills as work roles tend to become increasingly blended. Within each instance, the report documents specific skills required of workers in the new economy. Associated with each skill, the report presents the importance of the skill, supporting curriculum applications, and lastly, what constitutes worker/employee competency of that skill. The skills that are detailed include:

The Academic Basics:	Reading, Writing at Work, and Computation.
Learning to Learn:	Knowing How to Learn.
Communication:	Speaking Skills and Listening Skills.
Adaptability:	Problem Solving Skills and Creativity Skills.
Developmental Skills:	Self-Esteem, Motivation and Goal Setting, and Personal and Career Development.
Group Effectiveness:	Interpersonal Skills, Negotiation, and Teamwork Skills.
Influencing Skills:	Organizational Effectiveness and Leadership.

This national study appears to document a compliment of skills in a holistic approach. It seems to consider persons both in cognitive and affective domains with its discussions of desired workforce characteristics and knowledge.

Another specific skill study, *Workplace Basics: The Skills Employers Want* (Carnevale, Gainer and Meltzer, 1988) is a United States Department of Labor and American Society for Training and Development sponsored report that identifies and reviews seven specific skill groups needed for persons to successfully enter and contribute to the workforce of the next century. The skill groups of this study include: organizational effectiveness/leadership; interpersonal/negotiation/teamwork; self-esteem/goal setting/ personal and career development; creative thinking/problem solving; listening and oral communication; the 3 R's (reading, writing and computation); and, learning to learn. Having the same principle author and sponsoring agencies involved in its development, this report's identified skills are quite closely aligned to the previously mentioned study. Hence, the presentation of desired skills and characteristics of the future worker are again parallel to the above study. The report concludes with a discussion of methods in which employers can provide experiences/training opportunities for employees to develop those necessary skills.

A national skills document that is considered seminal in workforce training circles is the SCANS Report, or more formally referred to as *What Work Requires of Schools - A SCANS Report for America 2000* (U.S. Department of Labor, 1991). The Secretary's Commission on Achieving Necessary Skills (SCANS) authored and subsequently advised the Secretary of Labor on the level of skills required to enter the workforce. In this study, the Commission examined: the definition of skills needed for employment; proposed acceptable levels of proficiency; suggested effective ways to assess proficiency; and develop a dissemination strategy for the nation's schools, businesses and communities. As a result, five workforce related competency areas and three foundational skill areas were identified and promoted by the Commission as needed for successful entry into employment. Competency areas included were: resources; interpersonal; information; systems; and technology. The foundational skills identified were: basic skills; thinking skills; and personal qualities. SCANS is similar to the two previous studies in so much that the identification of specific skills desired by business, industry and labor are specifically documented and emphasis is given to two of the three domains of a holistic worker (i.e., cognitive and affective).

A companion piece to the National Education Goals of 1990 is the compendium, *Measuring Progress Toward the National Educational Goals: Potential Indicators and Measurement Strategies* (National Education Goals Panel, 1991). This report collaboratively developed by educators, business, and technical experts, identified indicators that would best facilitate schools and communities to meet the National Education Goals set forth by President Bush in 1990. Of the six goals, Goal Five - Adult Literacy and Lifelong Learning relates primarily to required skills necessary to compete in a global economy. More specifically, the goals' second objective details the following:

> "...workers will have the opportunity to acquire the knowledge and skills, from basic to highly technical, needed to adapt to emerging new technologies, work methods, and markets through public and private educational vocational, workplaces, or other programs".

As a result, the resource group for Goal Five designed an assessment strategy that would indicate measurement of adult literacy and lifelong learning. The strategy would include collecting data on the degree that literacy skills are possessed by, and required of, persons entering and established in the workforce.

A second publication associated with the National Education Goals of 1990, is *America 2000* (U.S. Department of Education, 1991). A publication co-authored by the U.S. Department of Education and the Office of the President, *America 2000* offers a question and answer format that provides citizens, communities and schools various options in meeting the National Education Goals. The scope of the document covers school accountability, new designs for schools, student learning, and community involvement with educational initiatives.

The codification of eight national education goals is presented in the recent legislation *Goals 2000: Educate America Act* (1994). Coordinated with the *School-to-Work Opportunities Act* (1994), Goals 2000 is noted as the "first step toward making the federal government a supportive partner in state and local systemic reforms at helping all children reach higher standards" (Fact Sheet, p. 3). Specifically, the purpose of Goals 2000 is to enrich the components and processes associated with school readiness, school completion, student academic achievement, leadership in math and science, adult literacy, safe and drug-free schools, parental participation, and professional development. With the School-to-Work Opportunities Act, Goals 2000 will contribute to "supporting state and local efforts to build a school-to-work transition system that will help youth acquire the knowledge, skills, abilities and labor market information" (Fact Sheet, p. 3) required to successfully move from school to career-oriented employment.

Workforce Policy Related Studies and Reports

As an extensive position report, *America's Choice: High Skills or Low Wages!* (National Center on Education and the Economy, 1990) projects the observation that the U.S. will no longer be able to experience economic growth based on an expanding workforce - a situation that has been the status quo in the past. The piece frames its recommendations and criticisms on productivity observations. The authors believe that productivity is already faltering, and that it will continue to do so if there is not a qualitative shift in the paradigms of our workforce. As such, the report offers a system of national standards and assessment that would ensure every student transitioning from school to the workforce would have an demonstrated ability to perform the traditional basic skills, experience occupation-specific skills, skills focusing on values, beliefs and attitudes. Lastly, the groups posits the importance for workers to have the continued opportunity to develop skills.

Building A Quality Workforce (U.S. Depts. Of Labor, Education, and Commerce, 1988) is a report highlighting approaches the country's education and business sectors must consider in order to build a quality workforce that will support the future U.S. economy. The first section of this two-part publication discusses entry level work skills required by business of future workforce participants. This section outlines existing and projected work skill "gaps", and then explores how education is responding to the challenge of workforce training to hopefully eliminate those disparities. Part two of the report contains descriptive profiles of various U.S. communities in which business, government, and education have collaborated efforts to minimize the transitional chasm existing between education and work.

Also in 1988, the Department of Labor published *Workforce 2000 - Work and Workers for the 21st Century.* This report identifies four key work-related trends that are shaping or will shape the economy and the workforce of the 21st century. Those trends are: the growth of the economy in general; the decreasing manufacturing component of the U.S. economy; a slower growing, yet very diverse workforce; and that new jobs will require higher skill levels. As a result of identifying these trends, the report discusses and reviews related workforce policy issues in light of their implementation and subsequent effect on: stimulating a balanced economic growth; accelerating productivity of the service industry; maintaining the "dynamism" of an aging workforce; reconciling the conflicting needs of the workforce; integrating minorities into the workforce and economy; and improving the educational preparation of all workers.

Education Counts - An Indicator System to Monitor the Nation's Educational Health (National Center for Educational Statistics, 1991) was the final report reviewed for this literature review. "Education Counts" as its commonly referred, reflects the efforts of a nationally formed, special panel that met to identify improvement strategies related to the federal educational data collection system. The panel subsequently identified six indicator areas and made recommendations that would improve national data collection associated with each. Those indicator areas identified were: 1) Learner Outcomes; 2) The Quality of Educational Institutions; 3) Student Readiness for School; 4) Societal Support for Learning; 5) Educational and Economic Productivity; and 6) Equity. Within two areas, Learner Outcomes, and Educational and Economic Productivity, the report makes specific recommendations for the development of indicator activities (e.g., various assessments and national data collection reports). Learner Outcomes are suggested to include: core content (i.e., facts and knowledge in traditional subject matter); integrative reasoning (i.e., workplace competence, interpersonal skills, communication, technology, and systems); and attitudes and dispositions. Potential Educational and Economic Productivity indicators cited were: work-relevant competencies; economic consequences of education and training (i.e., employment status and wage differentials); and workplace support for education and skill development (i.e., workplace sponsored education and training, and policies supportive of education and skill development).

FINDINGS AND RECOMMENDATIONS

Table 2 presents the matrix analysis and the findings from the study. The findings of this research are focused specifically on the SCANS Skills and Competencies (Appendix A). While each of the examined national reports have somewhat similar purposes, they all seemingly posit various skills. The skills are identified/validated through various methodologies. In general, the national workforce studies concentrate their skills identification on the "traditional" basic skills. More specifically, the following discussion highlights the uniqueness of the skills reported by the eight national studies in relation to the SCANS content.

Table 2

Study/report: SCANS: Foundational Skills	Workplace Basics (ASTD & USDL) 1988	Workforce 2000 (USDL) 1988	Building a Quality Workforce (USDL, USDE, USDC) 1988	America's Choice: High Skills or Low Wages (NCEE) 1990	America 2000 (USDE) 1991	Education Counts (NCES) 1991	America and the New Economy (ASTD & USDL)	Natl. Education Goals (Natl. Panel) 1991
Basic Skills	■	■	■	■	■	■	❍	■
Reading	❍	❍	❍			❍	❍	❍
Writing	❍	❍	❍			❍	❍	❍
Arithmetic/Math	❍	❍	❍			❍	❍	❍
Listening	❍		❍				❍	
Speaking	❍		❍				❍	
Thinking Skills	■		■			■	■	■
Creative Thinking	❍		❍				❍	
Decision Making			❍					
Problem Solving	❍		❍				❍	
Seeing Through Mind's Eye							■	
Knowing How to Learn	❍		❍			❍	❍	
Reasoning						❍		
Personal Qualities	■		■	■		■	■	
Responsibility	■							
Self-Esteem	❍						❍	
Sociability							❍	
Self-Management						■	❍	
Integrity/Honesty						❍		

■ = Implied in Discussion ❍ = Explicitly mentioned

The following related workforce system components and general terms are used within this report:

ASTD: American Society for Training and Development
NCEE: National Center on Education and the Economy
NCES: National Center for Educational Statistics
USDC: United States Department of Commerce
USDE: United States Department of Education
USDL: United States Department of Labor

SCANS: Competencies	Workplace Basics (ASTD & USDL) 1988	Workforce 2000 (USDL) 1988	Building a Quality Workforce (USDL, USDE, USDC) 1988	America's Choice: High Skills or Low Wages (NCEE) 1990	America 2000 (USDE) 1991	Education Counts (NCES) 1991	America and the New Economy (ASTD & USDL)	Natl. Education Goals (Natl. Panel) 1991
Resources						■		
Time								
Money								
Materials & Facilities								
Human Resources								
Interpersonal	■		■			■	❍	
Member of a team			■			❍	❍	❍
Teaches Others New Skills						❍		
Serves Clients								
Exercises Leadership	❍						❍	
Negotiates	❍						❍	
Works with diversity						❍	■	❍
Information								
Acquires/evaluates								
Organizes& Maintains							❍	
Interprets & Communicates								
Uses Computers to process info								
Systems	■						■	
Understands Systems						■		
Monitors/ Corrects Performance								
Improves or Designs systems								
Technology		■	■	■		■	■	
Selects technology								
Applies Tech. to task								
Maintains & Troubleshoots Equip.								

■ = Implied in Discussion ❍ = Explicitly mentioned

SCANS Foundation Skills and National Studies/Reports

Various combinations of the Foundation Basic Skills of the SCANS Report are either explicitly mentioned or implied in all eight of the reviewed studies. Of those basic skills, reading, writing and arithmetic/math were explicitly noted in six of the eight studies. Speaking and listening skills were referred to with less frequency, being documented in only three of the studies. As SCANS moves to thinking skills, the majority of the reviewed national studies made even less reference or demand for these types of skills. Thinking skills are implied in half of the studies, with explicit mention to thinking skills occurring in only three. Creative thinking, problem solving and knowing how to learn were skills most frequently desired by *Workplace Basics, Building A Quality Workforce, and America and the Economy*. The personal quality skills of SCANS were implied in discussion by five studies, however, explicit mention was only noted in three. Within those three studies, self-esteem, sociability, and self-management were specific personal quality skills consistently denoted. Overall, the national studies make regular reference to the basic skills as defined by SCANS (e.g., Reading, Writing, and Arithmetic/Math), however, explicit mention to the remaining foundational skills occurs with much less frequency. From this general observation, national workforce studies seemingly concentrate their skill identification on the traditional basic skills, and neglect somewhat the attention to "new basics", such as critical thinking and problem solving.

Of the eight national studies, *Workplace Basics, Building A Quality Workforce, and America and the Economy* appear to be the most complete in regard to the number of SCANS foundation skills included in each. This may be due to the governmental agency collaboration in sponsoring these studies. *Workplace Basics* and *America and the Economy* were both co-sponsored by the ASTD and the USDL. The USDE was also involved with these agencies in the writing of *Building a Quality Workforce*. However, the SCANS Report, which these studies were measured against, is published by the USDL.

Recommendations

Future national workforce studies should recognize both cognitive and affective domains of learners. As skills are identified that reflect the domains of learners, this activity would certainly contribute to a enriched curriculum. With the "whole learner concept" that is often espoused by education, business, and industry (e.g., worker/learner "interdependence" - America and the New Economy; "contextual learner" - SCANS Report) actually developed, the determination and availability of a consistent skill grouping may enhance a truer learner centered experience by providing educators a similar, integrated thread in national, state, and local curriculum. Regardless of the program, content, or school locality, the learner centered skills that embrace the diversity of all students can be a cornerstone for education to work curriculum.

SCANS Competencies and National Studies/Reports

The eight national studies clearly exclude the majority of SCANS Competencies. The five competency components, Resources, Interpersonal, Information, Systems, and Technology are viewed by SCANS as the enablers spanning the "chasm between school and the workplace" (SCANS Report, p. 15). It is evident from the matrix, that these "enablers" are either: 1) implied; 2) explicitly mentioned; or 3) infrequently or omitted altogether by the reviewed studies. This omission leads to questioning the intent of national workforce education in the area of general occupational skills. The five explicitly mentioned specific competencies were all Interpersonal competencies. The most frequently implied competency was that of Technology (found in five of the studies).

Workforce competencies (and skills) that regularly presented themselves in the reviewed national studies, but were only limitedly discussed or omitted altogether in the SCANS Report were: 1) the basic knowledge of work; 2) career development; 3) career awareness and mobility; and 4) citizenship.

Recommendations

SCANS emphasizes that competencies are "needed in workplaces dedicated to excellence, [and] they are the hallmarks of today's expert worker" (SCANS Report, p. 16). If productive workers must be able to use the five competency components in order to be effective why are these type of competencies, on the most part, excluded from national workforce studies? Perhaps the focus of the reviewed studies is limited to only what is perceived as "basic skills"? The specificity of the SCANS competencies towards general occupational competence may illustrate the lack of knowledge and/or interest by national concerns to adequately include these within workforce related education and economic studies. If this is the case, perhaps committee membership involving skill/competency identification needs to be redesigned? If these competencies are not developed in some fashion, it may limit the development of curriculum standards by not adequately presenting general occupational skills, that in turn, contribute to content related standards in education for work (e.g., the current skill standards that are being developed nationally). A recommendation to alleviate this perceived limitation, would be the implementation of a consistent, validated skills identification process to adequately identify general occupational skills. A Structured Group Interview (SGI) could be employed when the SCANS Report is updated. The same process could also be used with other national reports when formulating various skill areas to be identified.

CONCLUSION

With the conclusion of this initial inquiry, consideration should be given to at least four basic questions: First, are the configurations of skills currently being deemed "essential" in the reports present any commonality that can be forwarded in policy, then to curriculum design, and ultimately, classroom implementation? Second, what do the reports posit for the education and training of the nation's future workforce in relation to the "whole" learner? Third, how are these reports likely to interface with current educational legislation such as *Goals 2000 - Educate America Act*, or the *School-to-Work Opportunities Act*? And finally, what are some of the possible implementation outcomes of having a common strand of validated skills as a basis of education for work curriculum?

In reviewing the skills that appear most consistently across the reviewed national reports, the traditional "basic skills" are most apparent. To secondary educators preparing the workforce of tomorrow, does this imply that a rigorous academic foundation of the "basics" is the focus to their efforts? Outwardly, perhaps so. Looking more closely at the content of some these reports, the "whole learner" is often pointed to, however, when the actual "essential" skills are denoted, the basic skills are those most highlighted. Thinking skills (e.g., creative thinking, decision making, reasoning, and knowing how to learn), personal quality skills, and general occupational competencies (i.e., the SCANS Competencies) are limited or omitted altogether in the majority of the studies. Other than the "basics", there is a very limited picture of skill commonality between the studies.

Comprehensively, basic skills in conjunction with thinking, personal quality, and general occupational skills may contribute to greater degree of "whole" student/worker learning and educational experience. Educational training of the workforce should reflect this notion. If a common strand of essential skills can be identified by education, business, and industry encompassing the "whole" student concept, related policy and curriculum design could be interfaced more directly than at present. By integrating those skills, resulting curriculum and instruction can then engage the learner/future worker meaningfully by combining general and specific skill content with activities focused on learner values, culture, discovery, thinking processes, and workplace experience (Laster, 1985).

Within the realm of current legislative initiatives, the *School-to-Work Opportunities Act of 1994* and *Goals 2000: Educate America Act* could have an overarching impact on the direction of these studies' content in the future. As national education and economic reform studies are revalidated in relation to their identified skills, and, if the direction is taken to identify a common strand of skills popular for both policy and curriculum design, then one needs to be cognizant of legislative intent.

The *School-to-Work Opportunities Act of 1994* denotes several subsections in which skills and/or competence are detailed for both in-school and workbased learning. First, in Section 102(3) of the School-Based Learning Component, it is the intent that students receive " a program of study designed to meet the same academic content standards the State has established for all students, including, where applicable, standards established under the Goals 2000: Educate America Act...". This is followed by 102(4) which states "a program of instruction and curriculum that integrates academic and vocational learning, and incorporates instruction, to the extent practicable, in all aspects of the industry...". Although these subsections primarily stress broad content and programmatic considerations, it can be assumed that curriculum, instruction, and learning is linked to "academic content

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standards" (i.e., academic related skills) and "all aspects of the industry" (i.e., occupationally related skills). Section 103 becomes more specific in documenting skill related intent, by listing several subsections that highlight work-based learning components consisting of: 1) "...training related to preemployment and employment skills..."; 2) "...instruction of general workplace competencies, including instructional activities related to developing positive work attitudes, and employability and particpative skills"; and 3) "broad instruction, to the extent practicable, in all aspects of the industry".

Similarly, *Goals 2000: Educate America Act* "provides resources to states and communities to develop and implement comprehensive education reforms aimed at helping all students reach challenging academic and occupational standards" (USDE,1994, p. 3). As with the previously discussed piece of legislation, Goals 2000 has at least three specific goals devoted to skill related learning and concepts for: 1) Student Achievement and Citizenship; 2)Mathematics and Science; and 3) Adult Literacy and Lifelong Learning. In approaching these concepts, Goals 2000 highlights intent that focuses on: "all students learn[ing] to use their minds, so that they may be prepared for responsible citizenship, further learning, and productive employment..."; "[students] demonstrate the ability to reason, solve problems, apply knowledge, and write and communicate effectively"; strengthening "mathematics and science education"; "workers have[ing] the opportunity to acquire the knowledge and skills, from basic to highly technical, needed to adapt to emerging new technologies, work methods, and markets..." (Goals 2000: Educate America Act -- Fact Sheet, p. 9). Again, if these pieces of legislation influence policy and vice versa, perhaps a greater degree of thought should go to validating skills that encompass the stated intent. Those skills and area of competence documented in *Goals 2000* and *School-to-Work Opportunities Act of 1994* clearly demonstrate the need of student/worker learning to extend beyond the basic skills.

Finally, with a common strand of essential education for work skills identified, the actual implementation or integration of these skills into future curriculum can result in a broadened educational scope. Acting as a common thread, the core of skills when woven into the curriculum, enhance the reflection of a coalition of several theoretical components essential to education for work curriculum (Copa, 1992). Approaches such as technology, structure of disciplines, social reconstruction, and personal, and cognitive processes certainly can be enriched by established core skills which support their advancement in education and work environments. By emphasizing a core of skills in its content, the challenge for education for work curriculum is to provide instructional materials that will assist students in gaining competency for life and work, rather than simply becoming proficient at task performance or rote application of the "basics". In a recent policy publication, the RAND Institute reflects this thought by noting that a "[R]icher, better sequenced curricula that enhance academic and generic skills is needed by all workers" (p. 2) Content, teamed with appropriate instruction, needs to stress diverse skills that the student can apply in a variety of work and family contexts (Blinn and Pike, 1986). In support of this theory, the identification of a common set of diverse skills universally valued by education, business, and industry is the critical first step to achieving education for work curriculum that is accountable for a baseline of essential skills for all students, yet flexible in design to meet the uniqueness of an array of programs.

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Appendix A

SCANS: Workplace Know-How:
Foundation Skills and Workforce Competencies

SCANS Report skills are divided into two categories, Foundation Skills and Competencies. The following terms and definitions are designated within each category, and are sequentially presented to correspond with the matrix's format *:

Foundation Skills (Three Components)

I. Basic Skills:	Reads, writes, performs arithmetic and mathematical operations, listens and speaks.
Reading:	Locates, understands, and interprets written information in process and in documents such as manuals, graphs and schedules.
Writing:	Communicates thoughts, ideas, information, and messages in writing; and create documents such as letters, directions, manuals, reports, graphs, and flow charts.
Arithmetic/ Mathematics:	Performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques.
Listening:	Receives, attends to, interprets, and responds to verbal messages and other cues.
Speaking:	Organizes ideas and communicates orally.
II. Thinking Skills:	Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons.
Creative Thinking:	Generates new ideas.
Decision Making:	Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative.
Problem Solving:	Recognizes problems and devises and implements plan of action.
Seeing Things in the Mind's Eye:	Organizes and processes symbols, pictures, graphs, objects, and other information.

***Source:** The SCANS Report, 1991, Pages B1-B2 and C1-C2.

Knowing How To Learn:	Uses efficient learning techniques to acquire and apply new knowledge and skills.
Reasoning:	Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.
III. Personal Qualities:	Displays responsibility, self-esteem, sociability, self-management, integrity, and honesty.
Responsibility:	Exerts a high level of effort and perseveres towards goal attainment.
Self-Esteem:	Believes in own self-worth and maintains a positive view of self.
Sociability:	Demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings.
Self-Management:	Assesses self accurately, sets personal goals, monitors progress, and exhibits self-control.
Integrity/ Honesty:	Chooses ethical courses of action.

Competencies (Five Components)

I. Resources:	Identifies, organizes, plans and allocates resources.
Time:	Selects goal relevant activities, ranks them, allocates times, and prepares and follows schedules.
Money:	Uses or prepares budgets, makes forecasts, keep records, and makes adjustments to meet objectives.
Material and Facilities:	Acquires, stores, allocates, and uses materials or space efficiently.
Human Resources:	Assesses skills and distributes work accordingly, evaluates performance and provides feedback.
II. Interpersonal:	Works with others.
Participates as a Team Member:	Works cooperatively with others and contributes to group with ideas, suggestions and effort.
Teaches Others:	Helps others learn.

Serves Clients/ Customers:	Works and communicates with clients/customers to satisfy their expectations.
Exercises leadership:	Communicates thoughts, feelings, and ideas to justify a position, encourages, persuades, convinces, or otherwise motivates and individual or groups, including responsibly challenging existing procedures, policies, or authority.
Negotiates:	Works towards an agreement that may involve exchanging specific resources or resolving divergent interests.
Works with Diversity:	Works well with women and men, and with a variety of ethnic, social, or educational backgrounds.
III. Information:	Acquires and uses information.
Acquires and Evaluates Information:	Identifies need for data, obtains it from existing sources or creates it, and evaluates its relevance and accuracy.
Organizes and Maintains Information:	Organizes, processes, and maintains written or computerized records and other forms of information in a systematic fashion.
Interprets and Communicates Information:	Selects and analyzes information and communicates the results to others using oral, written, graphic, pictorial, or multi-media methods.
Uses Computers to Process Information:	Employs computers to acquire, organize, analyze, and communicate information.
IV. Systems:	Understands complex inter-relationships.
Understands Systems:	Knows how social, organizational, and technical systems work and operates effectively within them.
Monitors and Corrects Performance:	Distinguishes trends, predicts impact of actions on system operations, diagnoses deviations in the function of a system/organization, and takes necessary action to correct performance.
Improves and Designs Systems:	Makes suggestions to modify existing systems to improve products or services, and develops new or alternative systems.

V. Technology:	Works with a variety of technologies.
Selects Technology:	Judges which set of procedures, tools, or machines, including computers and their programs, will produce the desired results.
Applies Technology to Task:	Understands the overall intent and the proper procedures for setting up and operating machines, including computers and their programming systems.
Maintains and Troubleshoots:	Prevents, identifies, or solves problems in machines, computers and other technologies.

Improving Employment Readiness of Urban Youth: Perceptions of Students Enrolled in Vocational Courses in Urban Settings

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Running head: IMPROVING EMPLOYMENT READINESS OF URBAN YOUTH

Improving Employment Readiness of Urban Youth: Perceptions of Secondary Students Enrolled in Vocational Courses in Urban Settings

Youth in urban school districts are a segment of our population that have experienced considerable employment difficulties. Urban youth are often characterized as potential high school dropouts or non-college bound. High unemployment, irregular employment, or part-time employment offering no job security or benefits are additional descriptors of youth in urban school districts (Oakes, 1987; Rosenbaum, 1989). School-to-work preparation must be futuristic meaning that students must be prepared for success *and* progress in whatever post-graduation choice they make--more education as further preparation for the workplace or immediate entrance into today's demanding workplace. The job outlook for urban youth will continue to be limited unless educators make greater efforts to help urban students obtain a solid academic foundation that will prepare them for employment as well as for higher levels of education.

Vocational Education in Urban Settings

As efforts are made to reform schools by strengthening students' preparation for the workplace, the viability of vocational education programs in urban secondary school settings must be examined. Certainly, vocational educators must make themselves an important part of urban school reform. A major concern should be the reality that as the number of disadvantaged and at-risk youth increase in the inner cities, so does the demand for a highly skilled and well-educated workforce. The Carnegie Foundation's report, *An Imperiled Generation: Saving Urban Schools* (1988) concluded that career-oriented courses must be an integral part of the urban school's curriculum.

A search in vocational education literature in recent years indicated little attention from writers and researchers to the needs of urban communities, schools and youth. The viability of vocational education in the urban secondary school setting must be examined as efforts are made to reform schools by strengthening students' preparation for the workplace. Information is needed to assist vocational educators and policymakers in exploring new and multiple approaches to providing work-based education for urban youth. At a time when there is much interest in facilitating school to work transition for America's youth, career preparation models such as apprenticeships, cooperative on-the-job training, career academies, and tech prep should be developed or enhanced with urban students in mind. Vocational programs and courses in urban school settings should be improved or redesigned based on the needs of students served.

Career preparation models that have had varying degrees of success include career exploration, school-based enterprises, co-op education, youth apprenticeship, and youth service and service learning. In general, programs designed to strengthen the connection between school and work are usually either those focusing on curricula approaches in the classroom or those focusing on work outside of the classroom

(Kazis, 1993). Information that shows the effects of completing vocational courses, the impact of vocational courses on retention and employment, and the perceived value of vocational courses is needed to assist vocational educators in exploring new and multiple approaches for improving career pathways, performance, and employment readiness of urban youth (Scriven, 1991). While student needs should not be the single motivator for curriculum design, student perspectives cannot be ignored when seeking to improve or redesign programs and courses in urban school settings. Research should be conducted to describe the characteristics of urban students enrolled in vocational courses and their perceptions toward work and career-related issues.

Purpose and Objectives

Current literature suggests a need to increase urban students' educational and workplace potential through school reform measures. In response to the current era of school reform, the purpose of this study is to assist educators and policymakers in enhancing the employment readiness and career preparation of urban youth through the improvement of vocational programs and course offerings in the secondary school. The primary objective of the study was to investigate student perceptions toward work and career-related issues. Selected variables were examined to determine possible influences on student perceptions. Specific research objectives for this study included:

1. Describe characteristics of secondary students enrolled in vocational courses in urban school settings (e.g., reasons for enrolling in course, employment status, immediate plans upon graduation, career objectives).
2. Describe perceptions of secondary students enrolled in vocational courses in urban school settings toward work and career-related issues.
3. Identify underlying dimensions that comprise perceptions of secondary students enrolled in vocational courses in urban school settings.
4. Examine the influence of select variables on student perceptions including gender, grade level, and immediate plans upon graduation.

Methods and Procedures

Population and Sample

The target population for this study included all secondary students enrolled in vocational courses in a large urban school district. A purposeful sampling of intact classes in four urban high schools was used in order to minimize disruption to students and ensure that a variety of courses were represented in the sample. This procedure generated a final sample that consisted of 400 students enrolled in a vocational course. The data were collected in the Spring, 1994.

The research sample contained more female (62.6%) than male students (37.4%). In terms of ethnic composition, the majority of the students were African American (97.7%), and the remainder of the students (2.3%) were Caucasian, Asian, or Hispanic. The largest percentage of the students (29.9%) were 10th graders, and the next largest percentage (29.2%) were 9th graders. Almost 24% of the students (23.4%) were 11th graders, and the remaining 17.5% of students surveyed were 12th graders. Over half (59.0%) of the students reported having enrolled in the courses in Fall, 1993, and 28.5% reported enrolling in January, 1994. Another 12.5% of the students reported entering the course sometime after January, 1993.

Instrumentation

A two-part, self-report questionnaire was used to obtain information from students and to determine their perceptions regarding work and career-related issues. The first part asked students to supply demographic and background information such as gender, grade level, reason for enrolling, and plans after graduation. The second part of the questionnaire used a Likert-type scale (4 = strongly agree, 3 = agree, 2 = disagree, 1 = strongly disagree) requiring responses to 26 different statements designed to determine student perceptions toward their work and career-related issues. A reliability coefficient of .80 was computed for the entire Likert-type scale.

Procedures

Questionnaires were distributed to vocational teachers at the four schools identified as the sample for the study. The teachers were asked to administer the questionnaires during class time and return them by mail to the researcher. To eliminate any student fears related to teacher knowledge of the responses, students were provided an envelope in which to seal completed questionnaires.

Analysis of Data

Both descriptive and inferential statistics were used to analyze the data. Factor analysis identified latent dimensions underlying the 26 scale items that measured student perceptions. Analysis of variance (ANOVA) was employed to determine if there were significant differences between or among select demographic and background variables on identified dimensions of student perception. A .05 level of significance was established for all analytic procedures.

Findings

Characteristics of Vocational Students

The first research objective of this study was to describe characteristics of students enrolled in vocational courses in urban school settings including reasons for enrolling, prior completion of other vocational courses, immediate plans upon graduation, and career objectives. These characteristics are discussed in the following paragraphs. Table 1 illustrates the corresponding descriptive data.

Insert Table 1 about here

Reason for enrolling. When asked to identify the most important reason for enrolling in the vocational course, over 26% of the students indicated that they were interested in the subject. The next most important reason (22.6%) identified by the students was that they thought the course would help them get a good job after high school. A significant number of students (14.2%) were enrolled in a vocational course because they thought the vocational course would help them in college. Only 6.8% of the students were enrolled in the courses based on a guidance counselor's recommendation, and even fewer students (3.7%) were enrolled in the courses because they liked the teacher.

Prior completion of other vocational courses. Over 58% of the students indicated that they had not completed other vocational courses prior to the one in which they were currently enrolled. Interestingly, over 11.6% of the students indicated that they were not sure if they had taken other vocational courses.

Work-Related Characteristics. Of the employed students, 31.1% indicated involvement in a cooperative, on-the-job training experience, and 43.2% indicated that they were not involved in such an experience. Almost 26% of the students were not sure if they were involved in a cooperative, on-the-job training experience. The largest percentage of the employed students (31.7%) worked from 11 to 20 hours per week, and another 36.5% worked hours ranging from 21 to 40 per week. Over 51.5% of the employed students identified friends or family as their primary job sources, and 16.2% identified their vocational teachers as job sources. Another 28.7% of the students identified *other* sources such as "myself" and suggested that they conducted their own job search.

Immediate plans upon graduation. Almost 63% of the students identified some form of post-secondary education as their immediate plans upon graduation from high school. Over half of the students (50.9%) indicated that their immediate plans are to attend a four-year college or university and to major in areas such as law, medicine, journalism, nursing, computer science, and accounting. Another 11.9% have plans to attend a two-year college or vocational school to pursue further study in areas such as accounting, computer technology, and cosmetology. A considerable number of students (14.1%) were undecided about their immediate plans after graduation from high school. Only 9.2% of the students have plans to work full-time, and another 6.2% identified the armed forces as part of their immediate plans after graduation.

Career information source. The largest percentage of the students (21.3%) identified their parents as their primary source for career information. The vocational teacher was identified by the next largest group of students (16.5%) as their source of information about careers. A significant number of students (10.4%) acquire career information from magazines, newspapers, and television, and 22.2% of the students identified other teachers or adults as their sources of information about careers. Guidance counselors were identified by 11.5% of the students as their primary source for information about careers.

Career objective. Students were asked, "What job would you like to have 10 years from now?" Their responses were recorded based on categories identified in the *Occupational Outlook Handbook, 1992-1993 Edition* (see Table 1). The largest percentage of students (24.4%) identified *health-related* occupations such as dental hygienists and surgical technicians. The next largest percentage (11.6%) indicated an interest in business-related occupations such as administrative support and computer technicians. Another 17.5% of the students were undecided about the job they expect to have 10 years from now. Students expecting to have jobs in *other* areas identified occupational categories such as religious workers and life scientists.

Student Perceptions Toward Work and Career-Related Issues

The second research objective of this investigation was to describe the perceptions of urban students toward work and career-related issues. Student perceptions were positive. Mean scores for the 26 individual scale items ranged from a high mean of 3.57 to a low mean of 2.57 (4 = strongly agree; 1 = strongly disagree). The highest rated statement, *I expect to make a good income when I complete my education,* indicates that students recognize the significance of work and career-related issues. The lowest mean score indicates that students agreed less frequently with the statement, *I wish my parents would show more interest in my school work.* Table 2 provides the mean and standard deviation for each scale item used to assess student perceptions toward work and career-related issues.

Insert Table 2 about here

Factors Identified in Student Perceptions

The third research objective was to identify the underlying dimensions that comprise perceptions of secondary students enrolled in vocational courses in urban school settings. A pre-existing data structure was not assumed; therefore, an exploratory factor analysis with varimax rotation was selected to determine latent dimensions represented among the 26 scale items. Used for the purpose of parsimony, factor analysis can provide a simpler explanation and more meaningful organization underlying a set of measures than keeping the measures intact will provide (Hinkle, Wiersma, & Jurs, 1979; Tinsley & Tinsley, 1987).

Factor loadings *(correlation coefficients)* calculated for each variable indicated the weight or degree of relationship between each variable and the identified factors. A three-factor solution was adopted and scale items with a factor loading of .30 or higher were considered in determining the underlying dimension of each factor (see Table 3). Five of the item statements that loaded below the Kaiser criterion of .30 were removed from further analysis. So as not to confound the factors, and to maintain the independence yielded by the orthogonal factor rotation procedure, three item statements denoting similar meaning on more than one factor were removed from further analysis. The eight item statements removed from further analysis may have contributed to the total variance score of 26.0%

Insert table 3 about here

The first factor entitled, *Career Knowledge and Success*, contains 10 statements and accounted for 11.2% of the total variance. Career information and success issues are the primary focus of this factor. Six of the items focus on useful sources or supports for career information. The remaining four items on this factor include references to the relationship between education and career success.

School and work issues were the focus of the second factor which accounted for 8.8% of the variance. Six items loaded on this factor entitled, *School-to-Work Awareness*. Two of the items on this factor were related to how students identify with and relate to school. The other 4 items on this factor focused on how students define and value work.

Two items loaded on the third factor and accounted for 6.0% of the total variance. This factor entitled, *Career Choice Limitations*, contains two items focusing on limitations to career choice with respect to gender and ethnicity.

Influence and Comparison of Select Variables

The final research objective was to examine the influence of select variables on student perceptions including gender, grade level, educational level of parents, and post-graduation plans. Based on the factor analysis results, three variables, *career knowledge and success, school-to-work awareness,* and *career choice limitations*, were used as dependent variables in an ANOVA that examined influences and compared differences of select variables including gender and grade level.

The results of the ANOVA revealed that the independent variable, *grades usually earned in school*, generated significant differences in student perceptions toward career knowledge and success (factor 1) and school-to-work awareness (factor

2). The independent variable, *post-graduation plans* also generated significant differences in student perceptions toward factors 1 and 2. The independent variable, *job held is used to earn co-op hours*, revealed a significant difference in student perceptions toward *school-to work awareness* (factor 2). The variable, *when student enrolled in course*, also revealed a significant difference in student perceptions on career choice limitations (factor 3). Additionally, the *educational level of mother*, revealed a significant difference in student perceptions toward factor 1. Variables such as gender and grade level had no significant impact on student perceptions (see Table 4). The impact of variables generating significant differences is examined in the following paragraphs.

Insert Table 4 about here

An examination of the influence of *grades usually earned in school* on student perceptions revealed a significant difference between students earning mostly A's and B's and students earning mostly C's and D's on their perceptions toward factor 1, career knowledge and success. On this factor, students earning mostly A's and B's were more positive regarding career information and success issues than students earning mostly C's and D's. With regard to factor 2, school-to-work awareness, students earning higher grades were also more positive toward school and how they define and value work.

Another relationship was found between the variable, *post-graduation plans*, and factors 1 and 2. Students with plans to attend a four-year college or university were more positive about sources and supports for career information and career success (factor 1) than student with plans to enter the military or work full-time. Students with plans to attend a four-year college or university were also more positive toward Factor 1 than students who were still undecided about their plans after graduation. Of interest, those students who plan to attend a four-year college or university were more positive toward school-to-work awareness issues (factor 2) than students who had plans to attend a two-year college or vocational school. When compared to students planning to attend a four-year college or university, students who had not yet made a post-graduation decision did not seem to identify with and relate to school as well, and were less positive about the value of work (factor 2).

Students who were not earning co-op hours were more positive toward school-to-work awareness issues (factor 2) than students whose jobs were being used to earn co-op credit. Time of enrollment seems to make a difference in student perceptions. When compared to those students who enrolled in the course at some arbitrary time, students entering the course at the beginning of the school year or in the middle of the school year were more positive that their gender and ethnicity (factor 3) would not limit their career choices. Those students whose mothers were four-year and two-year college graduates or had completed some college were more positive about sources and supports for career information as well as the relationship between education and career success (factor 1) than students who were not sure of their mother's educational level. Also of interest, students whose mothers were two-year college graduates or had completed some college were more positive about career information and success issues than students whose mothers had only completed some high school.

Implications for Vocational Programs in Urban Secondary School Settings

The findings of this study provide a better understanding of students enrolled in vocational courses in urban school settings. The extent to which these students relate career knowledge to success, are aware of the relationship between school and work, and set limitations on their career choices based on gender and ethnicity is also shown. Implications for vocational courses in the urban school's secondary curriculum are discussed below.

Students in this study strongly believed that they will make a good income and be successful after they graduate from high school. Also, the students did not feel that school was a waste of time and they felt that their parents wanted them to go to college. This suggests that their families offer support and encouragement for the students' career success. These findings differ from the traditional view that urban students do not have a positive attitude toward work and career-related issues. Educators should take note of these apparent changes and consider this information for school and curriculum reforms.

Findings of this study suggest that students may form perceptions toward work and career-related issues based on three factors--*career knowledge and success, school-to-work awareness,* and *career choice limitations*. Future research could expand or clarify these preliminary factors. Based on this analysis of student perceptions, students enrolled in vocational courses appear to connect school and career knowledge to career success, and do not accept gender or ethnicity as limitations to their career success.

Although many of the students in this study recognized a need for career information, the lowest ranked statement was *I believe I will be successful after I graduate from high school*. This suggests that vocational education programs should focus more on helping students develop positive attitudes toward their future career success.

The descriptive data reported in this study relative to students' future occupational and educational plans supports the view that career counseling for urban students should be given more consideration (Winborne & Dardaine-Ragguet, 1993). Students in this study felt their vocational teachers were doing a fairly good job of providing information about careers; however, students received most of their career information from other sources. Since a considerable percentage of students indicated being undecided about a future career or college major, teachers of vocational courses may need to devote more time to career exploration and decision-making activities.

The fact that a substantial number of students were not sure if they had taken other vocational courses and were not sure if they were involved in a cooperative on-the-job training experience suggests need for improved academic counseling and increased clarity when marketing vocational courses and programs. Vocational education and vocational educators should empower students to investigate and make career and school decisions leading to a personally and professionally satisfying life.

The results of this study support the use of innovative approaches that attempt to integrate academic and vocational curricula. Most students enrolled in the vocational courses indicated that they will seek further education. Many reported enrolling either because they were interested in the subjects, they thought the courses would help them in college or help them locate good jobs after high school. Awareness of student interest and desire for appropriate school-to-work preparation suggests that vocational educators employ more creative ways to improve the quality of education for urban youth. For example, although mentoring is not a new concept, based on the results of this study with respect to career knowledge and success, mentoring would be an appropriate technique for these urban students. Delivering education as school-to-school preparation as well as school-to-work preparation would also seem to meet the expressed needs of these students.

Potential for the literacy level of mothers to exert influence on their children's academic achievement (Benjamin, 1993) has been reported. Findings in this study support a similar relationship between the educational level of the students' mothers and how the students identify with, and relate to, school and work. This apparent influence of mothers on the career attitudes of urban youth suggests that educators do more to involve parents in an educational partnership for urban youth. Such a partnership will benefit the students, parents, educators, and communities involved. More information about how to improve employment readiness of urban youth may be gained through replication of this study in other urban school districts. Replication of this study to other populations such as students in rural school districts may also provide information useful for developing courses and programs designed to meet the needs of all students.

Summary

The reader should be reminded that these findings cannot be generalized beyond the present population. Also, limitations with self-report survey methodology should be considered as results are interpreted. Yet, even with these limitations, the study represents one exploratory approach in clarifying work and career-related issues of urban high school students. In general, the results of this study suggest that these urban students possess career knowledge and expect schools to prepare them for work and further education. For example, these students do have careers plans, expect to continue their education, value school and work, and do not view their ethnicity or gender as barriers to success. The information from this study may help in future education reform by assisting vocational educators in promoting and positioning programs that will address the career preparation needs of urban youth. With revision of the instrument, and after analyses have been performed on several samples with similar variables, the extent to which the same factors tend to emerge may be determined.

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Table 1

Characteristics of Students Enrolled in Vocational Courses in an Urban School Setting *(n = 400)*

Characteristic	Percent
Most important reason for enrolling in the current vocational course	
Thought it would help me get a good job after high school	22.6
Thought it would help me in college	14.2
Liked the teacher	3.7
Thought it would be easy to pass or get a good grade	5.0
Needed the credits and nothing else was available or appealing	8.2
Friend recommended it to me	1.1
Guidance counselor recommended it to me	6.8
Wanted to get out of school early by enrolling in a cooperative on-the-job training experience	2.9
Interested in the subject	26.8
Other	8.7
Prior completion of other vocational courses:	
Yes	30.2
No	58.2
Not sure	11.6
Involvement in a cooperative on-the-job training experience *(n = 131)*	
Yes	31.1
No	43.2
Not sure	25.7
Number of hours worked per week reported by students *(n = 131)*	
10 or less	26.2
11-20	31.7
21-30	21.4
31-40	15.1
Over 40	5.6
Job sources reported by students enrolled in vocational courses *(n = 131)*	
Vocational teacher	16.2
School counselor	1.5
Friends or family	51.5
Newspaper	2.2
Other	28.7

Table 1

Characteristics of Students Enrolled in Vocational Courses in an Urban School Setting *(n = 400)*

Characteristic	Percent
Immediate plans upon graduation from high school:	
Work full-time	9.2
Attend a two-year college or vocational school	11.9
Attend a four-year college or university	50.9
Work full-time and attend school part-time	3.3
Military	6.2
Undecided	14.1
Other	4.3
Where the most information about careers was obtained:	
Parents	21.3
Vocational teacher	16.5
Other teachers	10.7
Other adults	11.5
Friends	1.1
Guidance Counselor	11.5
School career center	4.8
Books	6.7
Magazines, newspapers, or television	10.4
Other	5.6
Career objective *(What job (occupational category) would you like to have 10 years from now?)*:	
Executive, administrative, managerial, administrative support, clerical, and computer	11.6
Health *(diagnosing, assessment, treating, technologists, technicians)*	24.4
Lawyers and judges	5.5
Technologists *(except health)*	5.3
Visual/performing arts	3.8
Teachers, librarians, and counselors	3.0
Specialty-Athlete	4.0
Professional specialty *(engineering)*	5.0
Service *(protective, military, personal, food, building and grounds)*	7.8
Agriculture, construction, architecture, mechanics, urban planners	3.7
Other	8.5
Undecided	17.5

*Note: Totals may not equal 100% due to missing data or rounding error.

Table 2

Perceptions of Students in an Urban School Setting Toward Work and Career-Related Issues *(n = 400)*

Rank Order	Item No.	Item Statement	Mean	SD
1	10	I expect to make a good income when I complete my education.	3.57	.61
2	26	I believe I will be successful after I graduate from high school.	3.56	.64
3	4	I think high school is a waste of time for me.*	3.42	.75
4	1	My parents want me to go to college.	3.42	.75
5	5	I believe going to college is the wrong choice for me.*	3.38	.78
6	7	I have thought about dropping out of school.*	3.31	.88
7	16	I understand how academic subjects such as math, science, and English are used in the workplace.	3.26	.70
8	9	Getting a good job later in life depends on how well I do in school now.	3.26	.76
9	22	I see the need to obtain education and job training throughout my lifetime.	3.25	.64
10	2	Talking to my parents about my career plans is helpful.	3.25	.68
11	8	I believe I have been pushed into low-level, non-academic types of classes by teachers or guidance counselors.*	3.24	.76
12	3	I need to learn more about different careers in which I might be interested.	3.23	.66
13	6	My teachers do not encourage me to go to college.*	3.22	.78
14	17	I feel prepared to choose a college major/career field in which I will be satisfied and successful.	3.20	.71
15	12	Talking to my teachers about my career plans is helpful.	3.18	.69
16	25	Spending time with an adult role model who shares my career interests is important to my career future.	3.14	.72
17	13	I don't look forward to being a full-time worker.*	3.13	.84
18	11	Talking to my friends about my career plans is helpful.	2.97	.76
19	18	I am concerned about being able to handle both a career and family/household responsibilities.	2.93	.82
20	23	It will be difficult for me to get a good job after I complete my education.*	2.82	.85
21	20	Career choices are not limited by a person's gender (male/female).	2.75	.86
22	19	Career choices are not limited by a person's ethnic background.	2.71	.87

Table 2

Perceptions of Students in an Urban School Setting Toward Work and Career-Related Issues *(n = 400)*

Rank Order	Item No.	Item Statement	Mean	SD
23	15	Most jobs in our society are unpleasant.*	2.66	.73
24	21	If I decide not to go to college, high school is preparing me to locate permanent job opportunities.	2.65	.80
25	14	Most jobs in our society require an unreasonable amount of work.*	2.61	.73
26	24	I wish my parents would show more interest in my school work.*	2.57	.89

*Note: Statements 4, 5, 6, 7, 8, 13, 14, 15, 23, and 24 were recorded to reflect positive responses.
Scoring Scale: 4 = Strongly Agree; 3 = Agree; 2 = Disagree; 1 = Strongly Disagree

Table 3

Factor Loadings by Varimax Rotation for Student Perceptions Toward Work and Career-Related Issues

Perception Scale Items	Career Knowledge and Success Factor 1	School-to-Work Awareness Factor 2	Career Choice Limitations Factor 3	h^2
12	.620(.38)[a]	.057(.00)	.129(.02)	.40
1	.494(.24)[a]	.214(.05)	-.145(.02)	.31
10	.457(.21)[a]	.237(.06)	.060(.00)	.27
2	.443(.20)[a]	.173(.03)	.117(.01)	.24
11	.423(.18)[a]	-.013(.00)	.094(.01)	.19
17	.372(.14)[a]	.151(.02)	.029(.00)	.16
25	.363(.13)[a]	.061(.00)	-.041(.00)	.13
26	.361(.13)[a]	.183(.03)	.123(.02)	.18
3	.358(.13)[a]	.059(.00)	-.115(.01)	.14
16	.317(.10)[a]	.169(.03)	.202(.04)	.17
8	.243(.06)	.548(.30)[a]	-.136(.02)	.38
14	.032(.00)	.517(.27)[a]	-.006(.00)	.27
15	.054(.00)	.514(.26)[a]	.082(.01)	.27
7	.144(.02)	.470(.22)[a]	-.024(.00)	.24
23	.236(.01)	.420(.18)[a]	.068(.00)	.19
13	.278(.08)	.380(.14)[a]	.066(.00)	.22
19	.064(.00)	.040(.00)	.727(.53)[a]	.53
20	.011(.00)	.026(.00)	.623(.39)[a]	.39
Eigenvalue	2.01	1.59	1.08	4.68
% of total variance	11.2	8.8	6.0	26.0
% of trace *(common variance)*	42.95	33.97	23.08	100.00

Note: Factor loadings of .30 or higher were considered in naming each factor. Eight item statements were excluded from further analysis.

Table 4

Analysis of Variance (ANOVA) for Student Perceptions Toward Work and Career-Related Issues

		F-Value					
		Factor 1		**Factor 2**		**Factor 3**	
Independent Variable	*df*	Career Knowledge and Success	Post hoc comparison	School-to-Work Awareness	Post hoc comparison	Career Choice Limitations	Post hoc comparison
Gender	1	.941	-	3.76	-	2.80	-
Grade level	3	1.74	-	2.10	-	.214	-
Grades usually earned in school	2	4.96*	1 > 3	4.26*	2, 1 > 3	1.07	-
Currently employed	1	3.21	-	.445	-	.389	-
Hours worked per week	3	.732	-	.676	-	1.04	-
Job held is used to earn co-op hours	2	.479	-	3.39*	2 > 1	.190	-
When student enrolled in course	2	.394	-	.862	-	3.84*	1, 2 > 3
Reason for enrolling course	8	1.77	-	1.42	-	1.67	-
Educational level of mother	4	4.52**	4, 3 > 5 3 > 2	2.11	-	.453	-
Educational level of father	4	1.48	-	.418	-	.082	-
Source of information about careers	7	1.48	-	.998	-	.817	-
Post-graduation plans	6	4.87**	3 > 5, 1, 6	4.97**	3 > 2, 6	.838	-

$^{*}p<.05$; $^{**}p<.01$ (- indicates no significance and no post hoc comparison necessary)

"VOCATIONAL" STUDENT PARTICIPATION IN VOCATIONAL AND ACADEMIC COURSES IN ILLINOIS HIGH SCHOOLS

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Introduction

One prerequisite for studying vocational-technical education is a clear understanding of what constitutes a "vocational" student. Students who participate in vocational education do so for many different reasons and their participation takes on many different forms, from single course takers to advanced sequence completers. Additionally, the number, type and level of non-vocational courses taken by "vocational" students provide a great deal of supplemental information allowing an opportunity to describe secondary school "vocational" students in the context of a more complete learning experience.

Researchers have traditionally encountered difficulty in attempting to assess the effects of vocational education participation on students (Hill, Harvey & Praskac, 1992). Hoachlander (1989) stated that "obtaining accurate, comprehensive data for vocational education has been one of the most elusive objectives of federal policy" (p.1). One major source of difficulty is the lack of a clear understanding of what constitutes a "vocational program completer" or, even more basically, a "vocational student" (Campbell, Orth & Seitz, 1981; Tuma, Gifford, Horn & Hoachlander, 1989). The 1990 National Assessment of Vocational Education found that 97% of high school students take at least one vocational course, so are 97% of all high students "vocational students?" Probably not. Given that vocational participation is so broad, what percent could be considered "vocational students" and "program completers?" These questions continue to bedevil those who would seek to determine empirically the effects of vocational programming.

The purpose of this study was to describe enrollment, participation and completion patterns of vocational education students within the context of both their vocational and non-vocational course-taking experiences. Specifically, the objectives of the study were:

1. To identify vocational and non-vocational course taking and/or completion patterns.
2. To examine the relationship between vocational course taking and achievement.
3. To examine the relationship between levels of vocational program participation and academic course taking patterns.

Background

In an attempt to describe characteristics of vocational and academic students researchers have developed dichotomous definitions based on number of vocational courses taken or percentage of vocational units in the overall program (Oakes, Selvin, Karoly, & Guiton, 1992; Riesenberg & Stenberg, 1992). Even within the college prep track average vocational credits earned represent important levels of activity. In a profile of 1987 high school graduates (U.S. Department of Education, 1992) college prep track students averaged 2.23 Carnegie units of vocational education, which represented approximately nine percent of their total credits earned.

Certainly, there is a broad fluctuation reported in the number and type of vocational courses taken by individual students and course content is likely to vary by school.

A recent study which relied on number of courses to develop categories is reported by Oakes, Selvin, Karoly, & Guiton (1992). To control for the requirement that students at one of three high schools included in their study take two vocational courses, the researchers increased the required number of classes to be considered a concentrator at that school by two. It seems possible that students categorized as vocational with eight classes may not have had equivalent experiences to those classified at the other schools with six courses. A basic criticism of categorization based on number of classes is the lack of consideration of program structure and sequence. As an example consider the two hypothetical six-course vocational concentrators:

Student A	Student B
Introduction to Food Service	Bookkeeping
Technology I	Marketing
Child Care I	Child Care I
Keyboarding	Child Care II
Accounting I	Child Care III
Fashion Design I	Child Care Co-op

Although both students have satisfied the necessary number of courses to be considered a vocational concentrator, their vocational education experience is very different. Student A has dabbled in various vocational programs with little evidence of having built a coherent occupationally oriented or transfer preparatory sequence while student B has built a concentration in the specific child care program based on a sequence of linked progressive courses.

It is equally difficult to assign a vocational concentrator label based purely on percentage of overall credit. In a study conducted by Riesenberg and Stenberg (1992) vocational concentrators were determined to be those who had ten percent or more of their high school credit in vocational education based on recommendation of the researchers and state staff investigators. This type of analysis model ignores the variations introduced by number of credits required by individual schools for graduation, course periods per day, individual student differences in total credits attempted, and content level of the vocational courses. Additionally, without a linkage to course sequencing students with like percentages of participation may have very different experiences as in the hypothetical example above.

In a survey of public secondary vocational education programs conducted by the United States General Accounting Office (1993) vocational students were defined as those enrolled in "sequenced courses" although the specific sequence level was not defined. Although still problematic this level of definition does provide some clarification of the issue of who is a vocational student. Linking categorizations to specific sequences of courses within programs may provide a more accurate representation of secondary students' participation in vocational education and the relationship of academic course elements within the overall high school experience.

Methods

Illinois has over 700 comprehensive high schools. For this study, four community college districts were chosen which reflected geographic and demographic diversity among the high schools within the college district. Geographically, the districts represented the northern, central, and southern areas of Illinois, as well as the Chicago metropolitan area. Within each college district, three comprehensive high schools were selected based on the quality and comprehensiveness of their vocational/technical programs. In total, 13 high schools were selected for the study.

A random sample representing approximately 26 percent of the twelfth grade students from each of the selected schools who had participated in at least one vocational course was drawn from the 1992 state database (N=843). Transcripts were obtained and reviewed for each student in the sample. The transcripts were qualitatively analyzed to establish course levels and participation patterns. In addition, high school guidance counselors and administrators were interviewed at each site and documentation (curriculum guides, student handbooks, etc.) was collected to identify locally-based criteria for program completion.

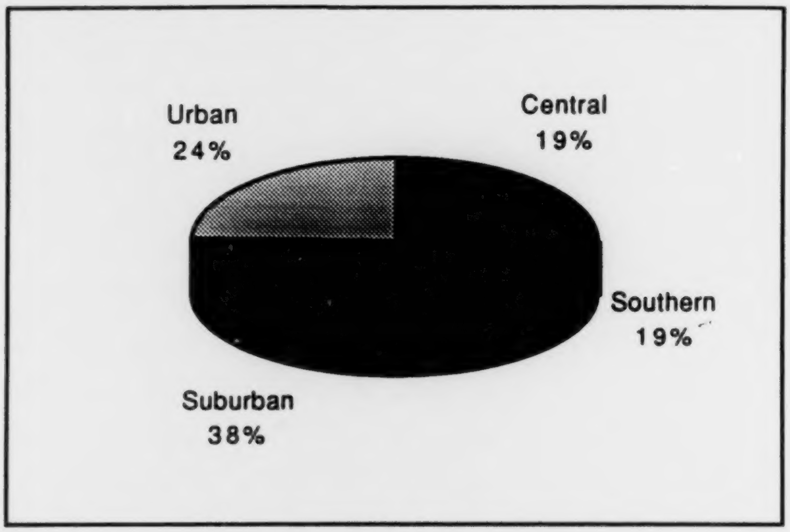
Prior to the study, transcripts were collected and analyzed from two educational agencies not in the sample in order to refine procedures and, more importantly, to establish potential patterns for classification.

Results

The 13 schools in the study represented a broad array of curricular structures: "typical" comprehensive high school curricula, focused occupational training, comprehensive curricula built around occupational majors, a school-within-a-school academy model, a school-wide core curriculum for all students, and a parallel GED curriculum for returning dropouts. Curriculum documentation clearly indicated the emphasis on the college prep "track" in most of the schools.

Figure 1 illustrates the sample breakdown by geographic area. These percentages approximate the relative distribution of the statewide secondary student population. The sub-samples represent 25% of the total graduating class of 1992 in the Chicago urban area, 24% in the suburban, 23% in the central, and 27.5% in the southern areas. 52.6% of the students in the sample were male and 47.4% were female. In the Chicago urban and southern clusters, slightly more than half the students were female, while the suburban and central clusters had a slight majority of male students.

Figure 1: Sample Breakdown by Geographic Area



Vocational Participation

Following the literature review and pilot study, the following definition of "sequence completion" was established for vocational courses: the completion of two consecutive vocational courses within a vocational program, where the first course was a prerequisite for the second. Thirteen vocational participation categories were developed based on the transcript analysis which reflect content levels as defined by local enrollment requirements. Introductory courses (no prerequisite, open enrollment) and Advanced courses (required prerequisite course in a progressive sequence of courses) were identified related to major vocational program areas (Industrial/Technical, Health, Home Economics, Business, and Agriculture):

0 No vocational course taken
1 Single course takers (introductory or advanced)
2 Introductory course takers only--single vocational program
3 Introductory course takers only--multiple vocational programs
4 Advanced course takers only--single vocational program
5 Advanced course takers only--multiple vocational programs
6 Sequence completers--single vocational program
7 Sequence completers--multiple vocational programs
8 Sequence completers-- single vocational program with some introductory courses in multiple programs

9 Sequence completers--single program with some advanced courses in multiple programs

10 Cooperative education course takers only

11 Special education only sequence completers

12 Some introductory, some advanced but not in the same program

Overall, slightly more than 63% (n = 533) of the students completed a vocational sequence (patterns 6-9). Of the non-sequence completers, 72% (n = 223) were introductory level only course takers with 42% (n =130) taking introductory courses in more than one vocational program. Over 90% of the students in the total sample took more than one vocational course. The average number of vocational courses taken was 8.36.

One simple method used to designate vocational program completion on a statewide basis is completion of a "key course." A key course generally occurs at the end of a sequence. The problem arises when key courses are designated by course title review, which is often the only information readily available to state staff (who have responsibility for their identification). Therefore, key course completion was analyzed separately as it was discovered that courses identified as "key" varied greatly in scope and placement in the sequence (e.g., in some cases, a key course was the only course in the sequence).

Four hundred seventy-six (56.26%) of the students in the sample completed designated key courses. When compared with the number of students who completed a course sequence (533) it becomes obvious that the key course designation is not an entirely accurate measure. Further, not all of the key course completers were sequence completers. Three hundred ninety-five (83.1%) of the key course completers also completed a course sequence as operationally defined for this study. Figure 2 illustrates the percentages of key course completers and non-completers in each pattern.

In order to relate the course-taking patterns to a meaningful academic indicator, each student was placed into a corresponding quartile based on class rank. Due to the variation in local policy concerning weight attached to courses and points applied to grades, the quartile was the most accurate reference available to describe academic achievement.

Figure 3 presents the breakdown of course-taking patterns by class-rank quartiles. The data are presented as percentages of students in each quartile which fall into each participation pattern. As illustrated in Figure 3, the patterns are widely distributed across quartiles, giving the appearance that there was little, if any, relationship between vocational course-taking and achievement. When correlation coefficients were calculated, no significant correlation's were identified between participation pattern and quartile.

Figure 2: Pattern Distribution by Key Course Completion

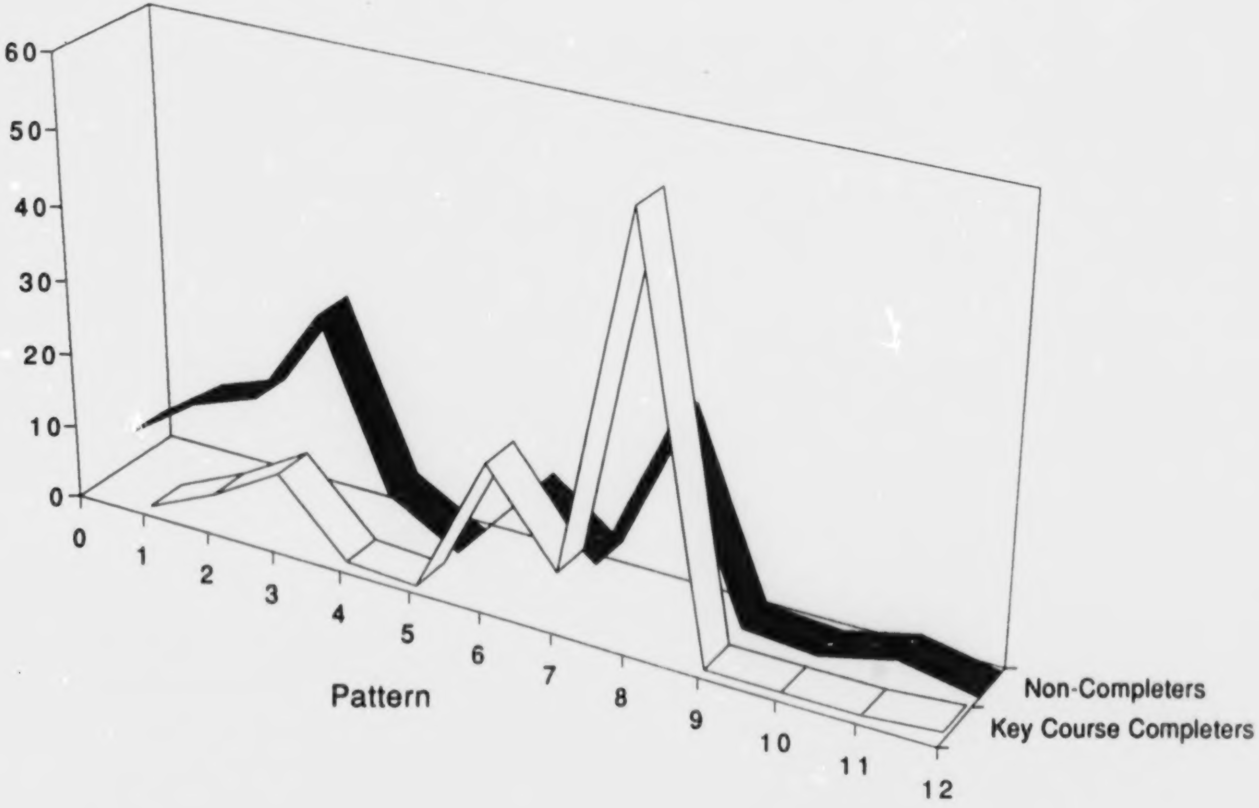
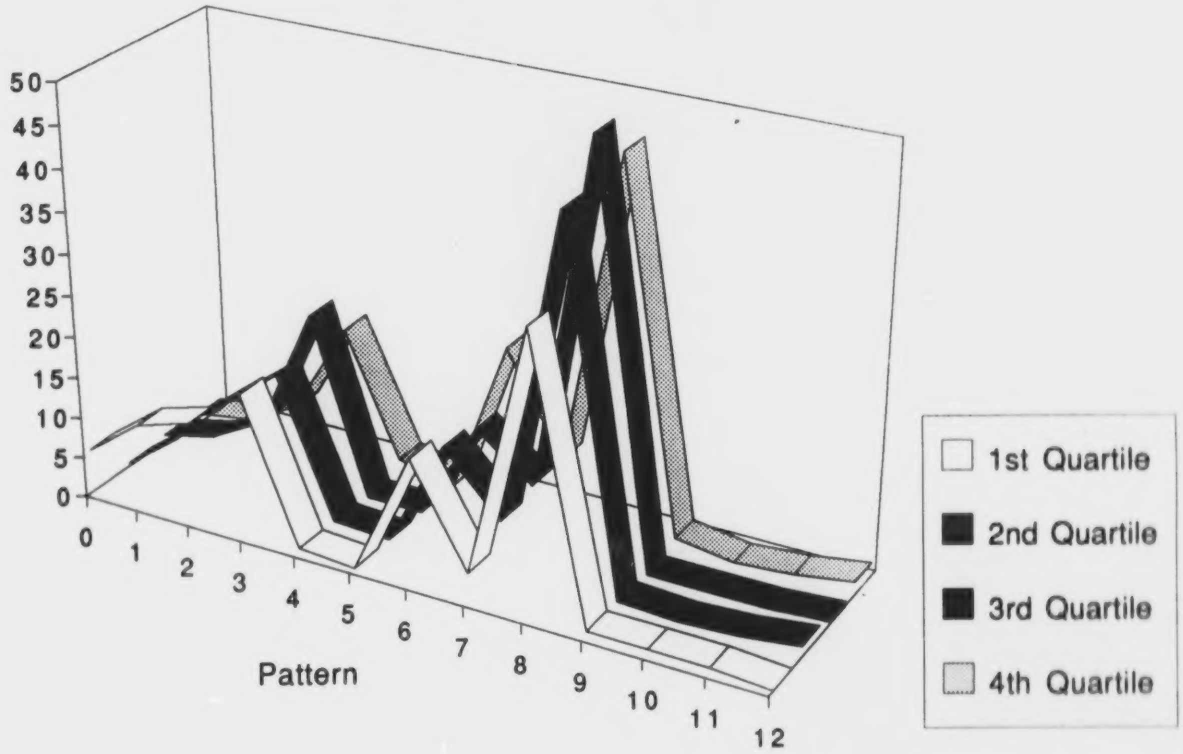


Figure 3: Pattern Distribution by Class Rank Quartile



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One way to examine vocational program participation is to calculate the total number of credits earned in each vocational-technical program area. Number of credits awarded for vocational courses ranged from .25 to 1.0, with most courses being worth .5 credits per semester. A preponderance of credits are earned in the Industrial Occupations (39.73% of the total sample) and Business Occupations (36.11%) areas. Overall, 21.36% (18,953) of the total credits earned by the students in the sample were earned in vocational courses. No significant correlation's were identified between course pattern and vocational program emphasis.

Academic Participation

After vocational participation patterns had been established, the transcripts were reviewed to identify academic (or non-vocational) course completion patterns. The basis for academic subject matter inclusion was derived from the Illinois State Board of Education's definition of academic attainment as the acquisition of communication, mathematics, science, and social science skills necessary to attain the performance standards of an occupational field. Additionally, given the increasingly global nature of communication, course work in foreign language was included in the analysis. Therefore, five academic categories were included: mathematics, science, language arts, social science, and foreign language. Given the structure of the high school curriculum and the desire to increase the specificity of the review, mathematics and science courses were dichotomized by level of complexity. Level I course work is defined as prerequisite knowledge to Level II course work. While not exhaustive, Table 1 shows the specific courses assigned to the math and science levels.

Table 1: Level I and II Mathematics and Science Courses

Mathematics		Science	
Level I	Level II	Level I	Level II
General Math	Algebra 2	General Science	Chemistry
Business Math	Geometry	Survey	Biology 2
Practical Math	Trigonometry	Biology	Physics
Pre-Algebra	Calculus	Life Science	Genetics

Language Arts, social science, and foreign languages contained common course titles which might be expected of those disciplines. Due to their nature, courses in these areas were not given the Level I or II designation.

For the purpose of statistical comparison of academic participation, the sample was dichotomized into those subjects that completed a vocational pattern sequence (patterns 6-9) and those who did not complete a vocational pattern sequence (patterns 0-1 and 10-12). A one-way analysis of variance (ANOVA) was used to determine differences - in terms of semesters of academic subjects completed - between vocational sequence completers (completers) and non-sequence completers (non-completers).

Table 2 reflects the mean number of semesters of Level I and Level II math and science completed by the groups. With respect to Level I math and science course completion, the groups are substantively and statistically similar. Analysis of Variance significance tests showed no significant differences between the mean number of semesters completed by the two groups (p = .20 for both math and science).

Table 2: Level I and II Mathematics and Science Semesters Completed

	Mathematics		Science	
	Level I	Level II	Level I	Level II
Completers	2.79	2.46	2.76	1.36
Non-Completers	2.65	3.66	2.87	2.78

In terms of Level II courses, the picture is somewhat different. Differences in mean number of semesters completed were highly significant ($p < .001$) for both Level II math and science courses. Looking at it another way, 41% of vocational sequence completers finished more than two semesters of Level II math, compared to 61% of the non-completers. Sixteen percent of the vocational sequence completers finished more than two semesters of Level II science, compared to 53% of the non-completers.

Language Arts and Foreign Language semester completion follow a similar patterns with the non-completers attaining a higher mean academic semester completion than their counter parts. With respect to the social science course completion patterns, the groups are similar. Completers received credit for a mean 5.60 (sd=1.60) semesters of social science and non-completers received credit for mean 5.60 (sd=1.57) semesters of social science.

Post Graduation Intent

Of the 843 transcripts reviewed for academic course taking patterns 308 listed a post-secondary institution to receive a copy of the transcript. One hundred-fifty of the transcripts were forwarded to technical schools or two-year institutions, and 158 transcripts were forwarded to four year institutions. Of the 150 transcripts forwarded to technical or two-year institutions, 49% described vocational completers and 51% described non-completers. Of the 158 transcripts forwarded to four year institutions, 29% described vocational completers and 71% described non-completers.

Discussion

This study examined the participation and completion patterns of students from the population of students in the class of 1992 who had taken at least one vocational course and were thus identified in the Illinois statewide vocational database. The sample (n = 843) represented approximately 26% of this population in the thirteen schools selected. Based on the data analysis, the following conclusions were drawn.

For the most part, students who take vocational courses primarily take multiple courses (93.3%). Further, a majority of vocational course takers complete a course sequence (63%). These findings confirm that a large percentage of high school students take some vocational education. The popular perception, however, has been that most vocational course taking is random by general education students filling out their schedules with "easy" courses or by college preparatory students taking a keyboarding or accounting course. The findings of this study dispel that notion to a degree, in that while seventeen percent of the students sampled fell into this pattern, over half of the students studied did complete an organized course sequence, and students averaged about eight vocational courses on their transcripts. These findings communicate to various publics that vocational education is more of a factor in students' high school career than perhaps was previously thought.

Another popular assumption is that higher-achieving students would take fewer vocational courses and would be primarily non-sequence completers. This did not hold true in this study. The distribution of patterns by class rank quartile followed the overall distribution very closely, and there was no significant relationship between pattern and quartile. Higher-achieving students were completing vocational course sequence (as were average and below average students). Vocational education appears to be reaching a broad cross section of the student population. Popular opinion suggests that vocational education courses are populated by predominantly low-ability students. This study did not support that perception. The relative percentages of students within specific participation patterns remained consistent across class rank quartiles. No significant relationship was found to exist between course taking pattern and class rank quartile. However, given the difference in Level II math and science mean semester completion, one should review the quartile distributions (based on class ranking) of the two groups with caution. Level II courses are often weighted and change the student ranking disproportionately to non-weighted courses.

The use of key courses to identify program completion may be problematic. Selection of key courses seems to be of major importance. Selection of key courses appears to reflect other than completion of a sequence. In some cases, the key course was the only course in the sequence. Can one course be a program? If key course completion is to accurately reflect sequence or program completion, then a key course should be at the end of a 2-3 course sequence, with prerequisites. This did work in a majority of cases, but it definitely missed some. The use of specific criteria based on course sequences developed in this study may enable a more accurate study of the experiences of "vocational students". Defining program completion on local criteria (prerequisite structure) reduces the errors inherent in large scale equalization models or arbitrary selection rule-based criteria.

The disparity in the mean number of Level II math and science semesters completed by vocational and non-vocational high school students should not be unexpected. The difference in the higher level math and science semester completion patterns is due, in part, to the limited number of instructional hours and course availability. That is, a student selecting a vocational curriculum has necessitated instructional time made up of vocational course work and is limited in the number of electives they can select. Additionally, the scope of the electives is limited due to course time conflicts. However, in examining the percentages of both groups which do complete more than two semesters of Level II courses, it appears that significant numbers of "vocational" students are finding time in their schedules to complete more advanced academic study, at least in the math area.

The difference in foreign language course selection may be due to career expectations. Students anticipating attending a four year institution to attain the necessary prerequisites for a particular career may be completing an institutional requirement for a pre-described number of foreign language credits. Additionally, supporters of the Tech Prep ideal should be encouraged by the popularity of the two-year community college or technical school as a postsecondary preference of both "vocational" and non-vocational students.

Ultimately, these findings reinforce the importance of offering well-organized programs of high quality courses. If vocational education is indeed reaching a wider array of students and more students are taking more courses, then the potential exists for expansion of quality vocational programming.

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PERCEPTIONS AND PRACTICES OF GEORGIA GUIDANCE COUNSELORS REGARDING AGRICULTURAL EDUCATION PROGRAMS

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INTRODUCTION

Historically there has been agreement among those responsible for counselor education that school counselors should assume a central role in promoting career education programs in the schools. Counselors play a major role in the development of students from secondary education to the world of work. To promote a central role in career education, counselors need a thorough understanding of and familiarity with the various kinds of work and the changes characterizing the world of work (Flum & Oppenheimer, 1988). One aim of guidance is to promote healthy concepts and psychological growth through the curriculum (Tennyson, Miller, Skovholt, & Williams 1989). Student access to vocational education courses and programs has always been a function of counseling and of schedule compromises. As more and more vocational programs are consolidated into area schools and skills centers, access is further constrained (Lotto, 1985).

Assisting students as they decide, plan, and pursue post-high school education is one of the major functions of counselors and their corresponding programs in high school. When students are accustomed to having the assistance of counselors in their progress toward high school graduation, they perceive educational advisement toward tertiary levels of education as a natural extension of services. In addition, parents, high school faculties, and administrators also identify this direct service as high priority (Rowe, 1989).

Personnel from technical colleges, colleges and universities acknowledge the high school counselor as the key link for students as they make the transition from secondary education to higher education (Rowe, 1989). Counselors as practitioner-scientists could have considerable influence and impact on providing such information. Guidance counselors have great impact on students' choices of educational programs and careers after graduation. In general, counselors may advise students to choose either conventional academic programs or vocational programs, each leading to dramatically different careers (Sproles, 1988). Counselors often encourage conventional choices, with modest emphasis on vocational choices (Lewis & Kaltreider, 1976).

Agricultural Education is in the process of change. A major part of that change is the move toward a more science based curriculum. Concepts and principles of chemistry, biology, genetics, physiology, and zoology are readily applied to plant and animal studies emphasized in Agricultural Education (Moss, 1985).

The concern for integrating more science and technology into the agricultural curriculum has been spurred by four movements: a) the national back to basics emphasis on math and science; b) the national study on Agricultural Education in the United States which indicated that " subject matter about agriculture and in agriculture should be broadened" (National Research Council, 1988); c) the expressed need by industry for employees to be able to solve problems and think more critically (National Council on

Vocational Education, 1990); and d) the rapid pace by which agriculture is changing as a result of technological advances. The Committee on Agricultural Education in Secondary schools (National Research Council, 1988) identified thirteen social, economic, and technical changes or advancements influencing the context of American agriculture including the following: demographics, urbanization, lifestyle changes, new biotechnological techniques, and public expectations about the role of schools (Budke, 1991). In the mid 1980s, state boards of education began to respond to recommendations in the Nation at Risk report (National Comission on Excellence in Education, 1983) . As a result, graduation requirements for high school students became more stringent. In many high schools, students were required to take more courses in such academic subject area as English, Math, and Science (Trexler & Barrett, 1992). The Unfinished Agenda, a report of the National Commission on Secondary Vocational Education stated that secondary education is in the grip of a back-to-basics movement that threatens vocational education. In 1985 the Georgia General Assembly unanimously passed the Quality Basic Education Act (QBE) aimed at improving public education in Georgia. QBE specified ten major needs to be met by the public school system through legislation. Among the provisions of the act were the increase in math and science requirements for graduation, a system for the evaluation of teachers, and a statewide basic curriculum (Georgia State Department of Education, 1985). These recommendations both documented and precipitated a recent focus within Agricultural Education on agricultural science or 'agriscience' education. (National FFA Organization, 1991).

Given the importance guidance counselors play in the enrollment of students into programs and the changes within programs of Agricultural Education, a study was needed to determine the perceptions and practices of counselors toward high school Agricultural Education in the state of Georgia.

PURPOSE AND OBJECTIVES

The specific objectives of the study were to determine:

1. The perceptions of counselors in Georgia concerning Agricultural Education.
2. Practices conducted by counselors in regard to Agricultural Education programs.
3. The degree of quality counselors perceive in Agricultural Education programs.
4. The counselors' degree of awareness of programs in Agricultural Education.
5. Counselors' perception of science credit for students in Agricultural Education.
6: The relationship between counselor perception of quality in the local program and their perceptions and pactices toward the Agricultural Education programs.

PROCEDURES

All Georgia high school counselors employed in schools with high school Agricultural Education programs served as the population for the study. Since the entire population was of a manageable size, a population study was conducted that included all 170 identified counselors. To collect data for the study, a questionnaire was developed by the researchers from the review of literature. A panel of experts consisting of university faculty and graduate students examined the questionnaire for content and face validity. Reliability was checked using Cronbach's Alpha reliability coefficient. The alpha for the instrument was .85. A mailing and follow-up yielded a total of 133 surveys for a 78% return. A random sample of ten of the 37 non- respondents were followed up with a phone call to determine non-response bias. No differences were determined between respondents and non-respondents.

RESULTS

Of the guidance counselors who made up the population for the study, a little over 82% had been a counselor for 5 years or more. Only 15% took agriculture when they were in high school. Only 7% of the counselors responded that the school where they worked offered science credit for agriculture.

Objective One: *To determine the perceptions of counselors in Georgia concerning Agricultural education.*

The counselors were asked to respond to statements regarding the Agricultural Education program in their school. Their responses were measured using a five point Likert scale where 1 = strongly disagree and 5 = strongly agree. The mid-point (3) was labeled as "undecided". The data in table 1 indicate that the counselors were undecided (A mean greater than three and less than 4) on statements regarding Agricultural Education for college prep students or students regardless of academic ability.

Table 1

Means and Standard Deviations for Statements Regarding Attitudes about Agricultural Education

Statements	M*	SD
Students enrolled in Ag Ed receive benefit from these courses.	4.29	0.58
Agricultural Education teachers have positive professional relationships with school administrators.	4.15	0.78
Ag Ed develops skills needed for employment in business and industry.	4.05	0.73
Agricultural Education teachers have positive professional relationships with academic teachers.	4.04	0.93
Ag Ed is valuable for all students, regardless of their academic ability.	3.97	0.94
Our Ag teachers are as effective in teaching ability as our academic teacher.	3.86	1.02
Ag Ed reinforces and enhances learning in academic courses.	3.77	0.92
I am knowledgeable about the course content, objectives, and nature of instruction in our agricultural education classes.	3.76	0.86
Ag Ed in our school would benefit college prep students.	3.75	0.85
Ag Ed provides students with competencies needed to succeed in college.	3.53	0.89
Parents of college-prep students are reluctant to have their children enroll in Agricultural Education classes.	3.21	1.15
Students who take Ag Ed courses tend to be less academically able	2.72	1.21
Agl Ed courses are primarily intended for the non-college bound student	2.32	1.12
College bound students are not interested in taking Ag Education courses.	2.70	1.19

*1 = Strongly Disagree 5 = Strongly Agree

They agreed (a mean greater than 4) with statements regarding students benefiting from the program and with statements regarding the professionalism of the agriculture teachers. They disagreed (a mean less than 3) with statements regarding agricultural Education being for non college bound students and the less academically inclined.

Objective Two: *To determine practices conducted by counselors in regard to advising students on Agricultural Education programs.*

Using the same Likert scale as in objective 1, the counselors were asked to respond to statements about their practices in advising students on agricultural education. As indicated by the data in Table 2, the counselors agreed (mean = 4.31) that they would advise a college bound student interested in Agriculture to enroll.

Table 2
Practices of Counselors Regarding Agricultural Education.

Statement	M*	SD
If a college bound student expresses interest in an agricultural education course, our guidance departments tends to advise him/her to enroll.	4.31	0.62
Our guidance department tends to advise students, regardless of academic record, to consider enrolling in agricultural education classes.	3.87	0.74
Our guidance department tends to advise students, regardless of future college or work plans, to consider enrolling in agricultural education classes.	3.83	0.78
When scheduling conflicts occur, our guidance department tends to advise college bound students to consider enrolling in agricultural education courses as opposed to non-required academic courses.	3.17	1.04
When scheduling conflicts occur, our guidance department tends to advise non-college bound students to consider enrolling in agricultural education courses as opposed to non-required academic courses.	3.12	1.14

*1 = Strongly Disagree 5 = Strongly Agree

However they were undecided (a mean greater than three and less then 4) as to whether they would advise students to enroll where there were conflicts in scheduling. It should be noted that for most of the statements there was a relatively high standard deviation which indicates that there were varying degrees of responses.

Objective Three: *To determine the degree of quality counselors perceive in Agricultural Education Programs.*

Again the respondents were asked to indicate their agreement with statements using the five-point Likert scale. The statements centered around the perceived value of the Agricultural Education programs in their schools. All three statements received a mean response between 3 and 4 on the scale. This seemed to indicate that the counselors were undecided as to the value of the program. The means had a high standard deviation which indicated there was not a close consensus among the respondents. The data are displayed in Table 3.

Table 3

Means and Standard Deviations for Counselors Perceptions of Quality in Agricultural Education Programs.

Statement	M*	SD
Value of the program to students who do not plan to attend college.	3.83	0.91
How do you rate the Agricultural Ed program at your high school as compared with other Ag Ed programs?	3.74	1.06
Value of the program to students who plan to attend college.	3.27	1.06

*1 = Very Low 5 = Very High

Objective Four: *To determine the counselor's degree of awareness of programs in agricultural education.*

The counselors were asked to indicate on a five point Likert scale (1 = very low and 5 = very high) , their degree of awareness with several programs in Agricultural Education. As indicated in table 4, of 15 different programs, the highest rating was for the individual (3.71) and team (3.74) judging contests. Over one half of the programs had a mean response of less than three. This indicates that the counselors as a group were not familiar with most of the programs. Note that there was a high standard deviation for the means of all of the items.

Table 4

Counselor Awareness of Programs in Agricultural Education Agricultural Education Programs

FFA Program	M*	SD
FFA Team Judging Contests	3.74	1.12
FFA Individual Contests	3.71	1.15
FFA National Chapter Award	3.39	1.31
FFA Scholarship Program	3.37	1.32
Public Speaking Contests	3.28	1.32
FFA Agricultural Proficiency Program	3.12	1.23
Supervised Agricultural Experience Programs	3.04	1.30
Agri-Science Awards Program	2.81	1.25
Washington Leadership Conference	2.41	1.23
Computers in Agriculture	2.33	1.20
National Safety Award Program	2.33	1.08
Food for America Program	2.29	1.09
Made for Excellence Program	2.18	1.08
Work Experience Abroad Program	2.11	1.02
Building our American Communities	2.06	1.03

*1 = Very Low 5 = Very High

Objective 5: *To determine counselors' perception of science credit for students in agricultural programs.*

To elicit their perceptions regarding the awarding of science credit for Agricultural Education courses, the respondents were presented with six statements concerning the topic. As a group, the counselors were undecided on the issue. The means ranged from a low of 2.95 to a high of 3.51. High standard deviations indicate that there was not a consensus among the group. Table 5 displays the data.

Table 5
Means and Standard Deviations for Statements Regarding Science Credit for Agricultural Education

Statement Deviation	Mean	Standard
If Agricultural Education classes could provide science credit for course offerings, our guidance department would advise more non-college bounds students to enroll in these courses.	3.51	0.99
The course content offered in an agricultural education class provide valuable college preparation.	3.31	0.91
College bound students would be more interested in taking Agricultural Education courses if they counted as science credit needed for graduation.	3.28	1.05
The course content of our Agricultural Education classes could fulfill course requirements for some academic courses.	3.22	1.09
If Agricultural Education classes could provide science credit for course offerings, our guidance department would advise college bounds students to enroll in these courses.	3.07	1.02
Agricultural Education classes should be allowed to count for science credit needed for graduation.	2.95	1.18

*1 = Very Low 5 = Very High

Objective 6: *To determine the relationship between counselor perceptions of quality in the local program and perceptions and practices toward the Agricultural Education programs.*

To determine the relationship, a Pearson Product Moment Correlation was conducted. The variables were the responses of the counselors regarding the statement on how they perceived the quality of their local Agricultural Education Program compared to other Agricultural Education Programs and 24 items designed to measure their attitudes and practices regarding the program. Of the 24 items correlated, 18 were significantly correlated at or below the .05 level. The correlations indicated that the higher the counselors perceived the quality of the Agriculture programs, the more positive their attitudes toward the programs. Particularly high correlations were detected on items concerning college bound students in the program and the professionalism of the agriculture teachers.

Table 6

Correlations Between Counselor Perceptions of Program Quality and Other Program Perceptions

Statement	Pearson Corr.	p
Agricultural Education courses are primarily intended for the non-college bound student	-0.192	.038*
Our Agricultural Education teachers are as effective in their teaching ability as our academic teacher	0.563	.0001*
Students who take Agricultural Education courses tend to be less academically able	-0.345	.0001*
Parents of college-prep students are reluctant to have their children enroll in Agricultural Education classes.	-0.216	.018*
Agricultural Education courses develop skills needed for employment in business and industry.	0.463	.0001*
Students enrolled in Agricultural Education courses receive benefit from these courses.	0.297	.001*
Agricultural Education teachers have positive professional relationships with academic teachers.	0.448	.0001*
Agricultural education is valuable for all students, regardless of their academic ability.	0.109	.236
Agricultural education reinforces and enhances learning in academic courses.	0.404	.0001*
Agricultural education classes provide students with competencies they will need to succeed in college.	.363	.0001*
College bound students are not interested in taking Agricultural education courses.	-0.250	.006*
Agricultural education courses in our school would benefit college prep students.	0.359	.0001*
I am knowledgeable about the course content, objectives, and nature of instruction in our agricultural education classes.	0.237	.010*
If a college bound student expresses interest in an agricultural education course, our guidance departments tends to advise him/her to enroll.	0.180	.050*
When scheduling conflicts occur, our guidance department tends to advise non-college bound students to consider enrolling in agricultural education courses as opposed to non-required academic courses.	-0.031	.744

When scheduling conflicts occur, our guidance department tends to advise college bound students to consider enrolling in agricultural education courses as opposed to non-required academic courses.	0.066	.486
Our guidance department tends to advise students, regardless of future college or work plans, to consider enrolling in agricultural education classes.	0.214	.023*
Our guidance department tends to advise students, regardless of academic record, to consider enrolling in agricultural education classes.	0.160	.090
Agricultural Education classes should be allowed to count for science credit needed for graduation.	0.194	.035*
College bound students would be more interested in taking Agricultural Education courses if they counted as science credit needed for graduation.	0.023	.802
The course content of our Agricultural Education classes could fulfill course requirements for some academic courses.	0.270	.003*
The course content offered in an agricultural education class provide valuable college preparation.	0.344	.0001*
If Agricultural Education classes could provide science credit for course offerings, our guidance department would advise more non-college bounds students to enroll in these courses.	0.047	.609
If Agricultural Education classes could provide science credit for course offerings, our guidance department would advise college bounds students to enroll in these courses.	0.037	.691

* significant at or below the .05 level

CONCLUSIONS

As a group, the counselors were positive about the benefits of Agricultural Education. They seemed to feel that agriculture teachers had a positive professional working relationship with colleagues. Although they were "undecided" about the quality of the local program and about offering academic credit for agriculture, the counselors were varied in their opinions. Correlations indicate that those who perceived the local programs as being quality programs, supported the idea of science credit and the course content as being valuable to college bound students. The same conclusion may be reached concerning the practices of the counselors regarding the Agricultural Education program. Those who perceived quality in the courses were more likely to place students into the program regardless of the student's future work or college plans.

As a group the counselors appeared to be uninformed about the programs offered in Agricultural Education. It is conceivable that this could be a reason why some counselors were not positive in their attitudes toward the program. However, caution should be exercised in making this conclusion. Poor quality programs probably play a role in the negative attitudes of some counselors.

RECOMMENDATIONS

1. High school agriculture teachers should be aware that guidance counselors' attitudes toward Agricultural Education depend on their attitude toward the quality of the local program.
2. Those who attempt to gain science credit for agriculture should concentrate on ensuring the quality of the local program. They should also solicit the help and support of the guidance counselor.
3. Local agriculture teachers should make an effort to educate counselors about the programs offered through Agricultural Education.
4. Teacher education programs and State Department of Education personnel should help local agriculture teachers assess and improve the quality of their programs.
5. The study should be repeated at the national level.
6. Further study should be done to determine the criteria counselors use in determining the quality of a local program.

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Career Indecision Types of Rural Adolescents in the Career Exploration Stage: Implications for Career Education and Tech Prep Programming

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RUNNING HEAD: *Career Indecision Types of Rural Adolescents.*

Abstract

A cluster analytic technique was used to classify a group of 189 rural adolescents according to career indecision as measured by the Career Decision Scale. The resulting three-cluster solution described types of career indecision experienced by adolescents in the early career exploration stage. These clusters span a continuum that includes tentatively decided-crystallizing preferences, transitional indecision, and chronic indecision/impaired development. These types appear to reflect the types and intensity of vocational tasks and situations typically encountered by individuals in early adolescence. Three demographic factors (gender, race, economic status) had no significant main or interaction effects on representation across these three indecision types. Results are interpreted using past studies on indecision types, career development theory, and implications for tech-prep programming.

Career Indecision Types of Rural Adolescents in the Career Exploration Stage: Implications for Career Education and Tech-Prep Programming

Career indecision has become an increasingly important construct in career development research and practice (Winer, 1992). The construct has been widely used to refer to problems related to career development, specifically those in making career-related decisions (Fuqua, Blum, & Hartman, 1988; Osipow, Carney, & Barak, 1976). Wanberg and Muchinsky (1992) noted that career indecision theory attempts to explain why some individuals are uncertain about career choice, while others are firmly committed.

The professional literature distinguishes between individuals who are undecided about their careers and those who are, by their nature, generally indecisive (Hartman, Fuqua, & Hartman, 1983). Undecided individuals are thought to be going through a developmental stage that is both normal and temporary. These persons do not experience a great deal of pressure to make career-related decisions and delay the process while they acquire additional information about themselves, occupations and the world of work, or the decision-making process. On the other hand, indecisive individuals are thought to possess certain traits that do not allow them to readily make decisions of any kind, including decisions related to a future career. This problem is referred to as chronic indecision.

It is widely accepted that career indecision is a complex, multidimensional construct that is represented by multiple types (Hartman, Fuqua, & Jenkins, 1986). Crites (1969), for example, described three types of indecision problems; multipotentialed (cannot decide among multiple career options), undecided (cannot discriminate among opportunities), and uninterested (no discernable pattern of career interests). Hartman et al. (1983; 1986) argued that a general three-group typology was empirically useful. They divided college-aged students into career decided, developmentally undecided, and chronically undecided groups. Osipow, Carney, Winer, Yanico, and Koschier (1976) constructed a measure of career indecision (the CDS) that was based on the premise that career indecision is a multidimesnional construct. Even so, over the past 15 years this construct has been viewed and measured as a single indecision score.

In recent years, a number of investigations have begun to focus on the possibility that several types or categories of career indecision may exist. Two approaches are commonly used to study the multidimensionality of career indecision: factor analysis and cluster analysis. Factor analytic techniques have been used in a variety of studies to identify the underlying dimensions of career indecision for college-age (Hartman & Fuqua, 1982; Osipow, Carney, & Barak, 1976) and high school students (Hartman et al., 1983; Schulenberg, Shimizu, Vondracek, & Hostetler, 1988; Shimizu, Vondracek, Schulenberg, & Hostetler, 1988). While these studies provide rather convincing evidence of the complex nature of career indecision (Fuqua et al., 1988), they have not always provided stable (invariant) results across groups.

Cluster analysis is a technique used to identify homogeneous groups of individuals (*e.g.*, types or taxonomies) according to degree of career indecision. Savickas and Jarjoura (1991) argued that the typological (cluster analytic) approach was superior to a more traditional trait (factor analytic) approach for the CDS because of the complexity of its items. "Although item complexity may reduce the reliability of a trait measure [factor analysis], item complexity may increase the reliability of a type indicator because types are defined by multiple traits" (p. 85). Winer (1992) supported cluster analysis for indecision research noting that results of the technique reflect the original idea of CDS developers (*i.e.*, a number of indecision types exist).

Fuqua et al. (1988) chose a cluster analysis to reveal four increasingly serious levels of career indecision among adolescents on the basis of two dimensions - decidedness and anxiety. Wanberg and Muchinsky (1992) revealed a similar four cluster solution for college students including decided-comfortable, decided-concerned, undecided-indifferent, undecided-anxious. Savickas and Jarjoura (1991) investigated college students according to response on individual Career Decision Scale (CDS) items. Their investigation revealed five career indecision types which they labeled decided, specifying choice through advanced exploration, crystallizing preference through broad exploration, unrealistic, and indecisive.

A need exists to develop a more complex and realistic understanding of career indecision (Wanberg & Muchinsky, 1992). In this study I addressed this issue by investigating career indecision in rural adolescents. A rural population is worthy of study in that significant differences between urban and rural youth have been documented. Helge (1991) noted that rural youth often experience unique and difficult barriers to successful career preparation. Problems are due to wide gaps in the availability of resources, postsecondary educational opportunities, employment options, and access to needed programs and services. People living in rural areas also tend to be more economically, educationally, and vocationally disadvantaged than their urban counterparts.

Statement of the Problem

This study sought to classify and differentiate types of career indecision experienced by rural adolescents. This effort extended past work which used CDS Indecision Scale items for cluster identification (see Savickas & Jarjoura, 1991). Ninth grade rural students were employed to examine the indecision types of youth coping with the transition from the growth/awareness stage to exploration stage of career development. Differences between indecision types on career certainty and affective/ cognitive career maturity were examined. The influence of gender, race, and economic disadvantage on indecision type was also considered.

Research Methods and Procedures

Sample

The research sample included students ($\underline{n}=189$) enrolled in the ninth grade of a rural public school system in the southeastern United States. The sample included 102 males (54.0%) and 87 females (46.0%). Slightly over one-half of participants were White ($\underline{n}=103$) with the remainder being African American ($\underline{n}=86$). Comparable numbers were identified as economically disadvantaged ($\underline{n}=96$) and non-disadvantaged ($\underline{n}=93$) according to participation in school lunch programs. Almost two-thirds of participants ($\underline{n}=122$) planned to attend a four-year college upon graduation, while a small percentage planned to attend a technical school or community college ($\underline{n}=32$). Nineteen participants planned to go to work or enlist in the military. Remaining students ($\underline{n}=11$) stated they had no plans.

Measures

Measure of career indecision. The Career Decision Scale (CDS; Osipow, Carney, Winer et al., 1976) assessed career indecision. The CDS is comprised of 18 self-rated items, 16 which assess indecision. The first item (*i.e.*, Certainty Scale) indicates the degree of certainty one feels in having made a career choice. Items 3 through 18 (*i.e.*, Indecision Scale) measure one's level career indecision. High Indecision Scale scores indicate indecision regarding career choice (Hartman et al., 1986). Responses are recorded using a Likert-type response ranging from 1 (low similarity to item) to 4 (high similarity to item).

Measure of career maturity. The Career Maturity Inventory (CMI; Crites, 1978) assessed maturity of attitudes and competence deemed necessary for realistic career decision making. The CMI Attitude Scale elicits feelings, subjective reactions, and dispositions that an individual has toward making a career choice and entering the world of work. The Attitude Scale contains 75 items that assess five attitudinal (*i.e.*, affective) variables. One overall career attitude score (range of 0-50) can also be calculated and was used for this study. The CMI Competence Test measures cognitive variables involved in choosing an occupation and is divided into five subscales which are scored and interpreted separately (Crites, 1978).

Procedure

The CDS, CMI, and self-report demographic questionnaire were administered through the school's counseling office to all ninth grade students. Testing represented part of an on-going effort to provide career exploration and guidance opportunities. A written protocol was used for testing sessions. Measurement instruments were administered during a one-week period in fall of 1992. Data was subsequently made available for analysis.

Findings and Conclusions

Cluster analysis was deemed an appropriate method of analysis for this study. This analytic tool identifies relatively homogeneous groups based on a set of complex, related variables (Fuqua et al., 1988). Ward's minimum variance method formed clusters in order to minimize within-group variation and maximize between-group variation (Wanberg & Muchinsky, 1992). Thus, increase of the within-cluster sum of squares index was analyzed at each stage to determine the optimum number of clusters. The first large increase in index error rate (+22) was found at the change from a six to five-cluster solution. An even larger jump occurred at the change from a three to a two-cluster solution (+68) suggesting that a three-cluster solution might also be appropriate. Three- and six-cluster solutions were plotted and interpreted using CDS means to determine which solution would be adopted. The three-cluster solution was eventually chosen because it represented the largest increase in the sum of squares index and provided greater discrimination between possible indecision types. Figure 1 portrays the career indecision profiles (CDS scores 3-18) for the three-cluster solution.

Type differences on career maturity measures. An omnibus multivariate analysis of variance (MANOVA) revealed significant differences between indecision types on the basis of career certainty, affective career maturity, and cognitive career maturity, $\lambda=.752$, $\underline{F}(14,312)=3.414$, $\underline{p}<.001$ (see Tables 1 and 2). Univariate ANOVA and post hoc pairwise contrasts with Bonferroni adjustment were used to determine specific differences (see Table 3).

The three indecision clusters were labeled and described by considering identified differences on career certainty and career maturity attitudes and competence (identified by MANOVA), as well as by interpreting profiles of CDS item mean scores (see Table 4). Type 1 indecision comprised 39.7% of the sample ($n=75$). This group possessed the greatest degree of career certainty and reported lower levels of indecision (CDS mean= 27.15) than other types. Adolescents in this type were also more mature in attitudes toward careers and in cognitive skills of self-appraisal and knowledge about the world of work than their counterparts. Graphically, Type 1 presented a fairly flat profile for the 16 CDS items reflecting a tentatively decided and confident type of individual. Having identified several career alternatives, individuals were in the process of formalizing plans to attain their objectives. Even so, they expressed some concern about having to choose and implement one option. This first type was labeled *tentatively decided-crystallizing preferences.*

Type 2 constituted 38.1% of the sample ($n=72$) and represented a considerable level of indecision (CDS mean=38.60). Type 2 did not have good ideas of career interests, but had initiated broad exploration of possible options (similar to Type 1) and had identified several tentative career fields. However, interests were very fragile. This category also reported uncertainty about how choices could be transformed into occupations. Individuals expressed a strong need for occupational information, reinforcement, and support to crystallize tentative career options. Indecision by this group was labeled *transitional indecision* to reflect initiation of career exploration but not being firmly established in this stage. It appeared that this group was in transition from the growth/awareness stage to exploration stage. Though they had not formalized career plans, they were interested and seemed to be willing and able to complete this task given appropriate support and assistance.

Type 3 ($n=42$; 22.2%) represented the most indecisive group (CDS mean= 43.59). This group, named *chronic indecision/impaired development*, indicated concern and discouragement at their inability to identify career interests and viable options. This situation was exacerbated by a lack of information about personal interests/abilities and careers. Difficulty in the decision making process has caused this group to put off making a decision. Type 3 members were seriously impaired in career development as evidenced by immature career attitude and competence scores.

Influence of select factors on type classification. An asymmetrical hierarchical log-linear analysis explored the effects of gender, disadvantage status, and race on classification of indecision (Type 1-3). Likelihood component and partial association statistics from the analysis revealed no significant differences in type composition on the basis of interaction or main effects of these variables.

Implications and Recommendations

Three distinct types classified the variations in indecision experienced by rural adolescents toward choosing and implementing a career. Identification of these indecision types expands our current understanding of career development theory and may contribute to the improvement of secondary vocational preparation programs. Vocational educators and counselors can use identification guidelines and classification rules from this study as a means of screening for indecision type. This type of information is potentially important, particularly for 9th graders who are required to begin the process of considering and selecting academic and occupational alternatives (e.g, academic track or tech prep, apprenticeship program or academic honors classes). Educators must be especially sensitive to the fact that adolescents do not progress from an awareness level to exploration level of career development at a uniform rate. One implication of this finding is the need to consider each student as an individual rather than treating all youth as a homogeneous group.

Vocational educators might be most successful if indicators of career development problems (e.g., affective or cognitive career maturity components) are addressed prior to engaging in program or career decision making. Given the relatively high number of youth who expressed indecision, additional career exploration activities seem warranted. Finally, knowledge of indecision type can assist educators in targeting needed support and direction for adolescents as they select academic and vocational coursework related to tentative career choices. For example, youth with chronic indecision may require intensive, teacher-guided assistant in self-appraisal and broad-based occupational exploration activities. Conversely, adolescents who have already made tentative choices may benefit from individualized, focused career exploration.

Results of this analysis must be interpreted with several limitations in mind. First, the invariance or stability of this three-cluster solution across a variety of samples is unknown. However, similarities between this cluster solution and past research on indecision types are encouraging. Replications of this study must validate or modify this tentative indecision typology. Secondly, a caution expressed by Savickas and Jarjoura (1991) regarding interpretation must be kept in mind when considering results from this study. They noted that "students will rarely be a pure type, that is, have a profile consistent with one cluster solution. Therefore, classification rules will require further research to determine if profiles replicate, what rules minimize misclassification, and how valid profiles are for counseling" (p. 89).

One goal of this line of inquiry should be the eventual ability to prescribe distinctive interventions for different types of career indecision (Hartman et al., 1986; Savickas & Jarjoura, 1991). Practitioners can use profile identification guidelines and classification rules as one indication of how successfully adolescents are coping with vocational tasks or if they are experiencing delayed/impaired development. And, while additional support is needed before definitive interventions can be prescribed, results of the present study move the field one step closer to making that goal a reality for adolescents in the early exploratory stage.

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Table 1

Intercorrelations of CDS Certainty Score, CDS Indecision Scale, CMI Attitude Scale, and CMI Competence Test Subscales

	2	3	4	5	6	7	8
1 Certainty	-.122	.123	.088	.138	.147	.093	.220
2 Indecision	-----	-.523	-.334	-.315	-.340	-.307	-.205
3 Attitude Scale		-----	.503	.482	.472	.481	.394
4 Self-Appraisal			-----	.760	.689	.665	.530
5 Occupational Info.				-----	.763	.777	.563
6 Goal Selection					-----	.741	.594
7 Planning						-----	.539
8 Problem Solving							-----

Table 2

Means and Standard Deviations of CDS Certainty Score, CDS Indecision Scale, CMI Attitude Scale, and CMI Competence Test Subscales for Indecision Types

Variables	Type 1		Type 2		Type 3		All	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
1 Certainty	3.17	.69	2.81	.71	2.74	.86	2.90	.75
2 Indecision	27.15	5.12	38.60	4.53	43.59	6.37	35.20	8.61
3 Attitude Scale	32.87	5.30	29.63	6.01	27.46	5.16	30.53	5.92
4 Self-Appraisal	10.49	4.34	10.37	4.32	7.54	3.85	9.79	4.44
5 Occupational Info.	11.23	5.38	10.15	5.70	7.78	4.29	10.10	5.38
6 Goal Selection	10.01	4.76	8.47	4.23	7.49	3.49	8.84	4.32
7 Planning	9.57	4.98	8.46	4.94	7.13	3.93	8.67	4.84
8 Problem Solving	6.50	3.07	6.16	3.07	5.15	2.24	6.07	2.92

Note. Possible range of CDS Certainty scores is 1-4; CDS Indecision Scale scores range is 16-64; CMI Attitude Scale range is 0-50; Possible range of scores for each CMI Competence Test is 0-20.

Table 3

Summary for Univariate Analysis of Variance and Post hoc Contrasts

Univariate ANOVA			Post hoc Contrasts		
Effect	*df*	*F*			
Certainty	2,186	6.59*		NS	
Attitude Scale	2,183	13.84*	Type 1	>	Type 2,3
			Type 2	>	Type 3
Self-Appraisal	2,180	7.45*	Type 1,2	>	Type 3
Occupational Info.	2,173	5.56*	Type 1	>	Type 3
Goal Selection	2,171	4.74*		NS	
Planning	2,168	3.33		----	
Problem Solving	2,166	2.70		----	

*$p < .007$.

Table 4

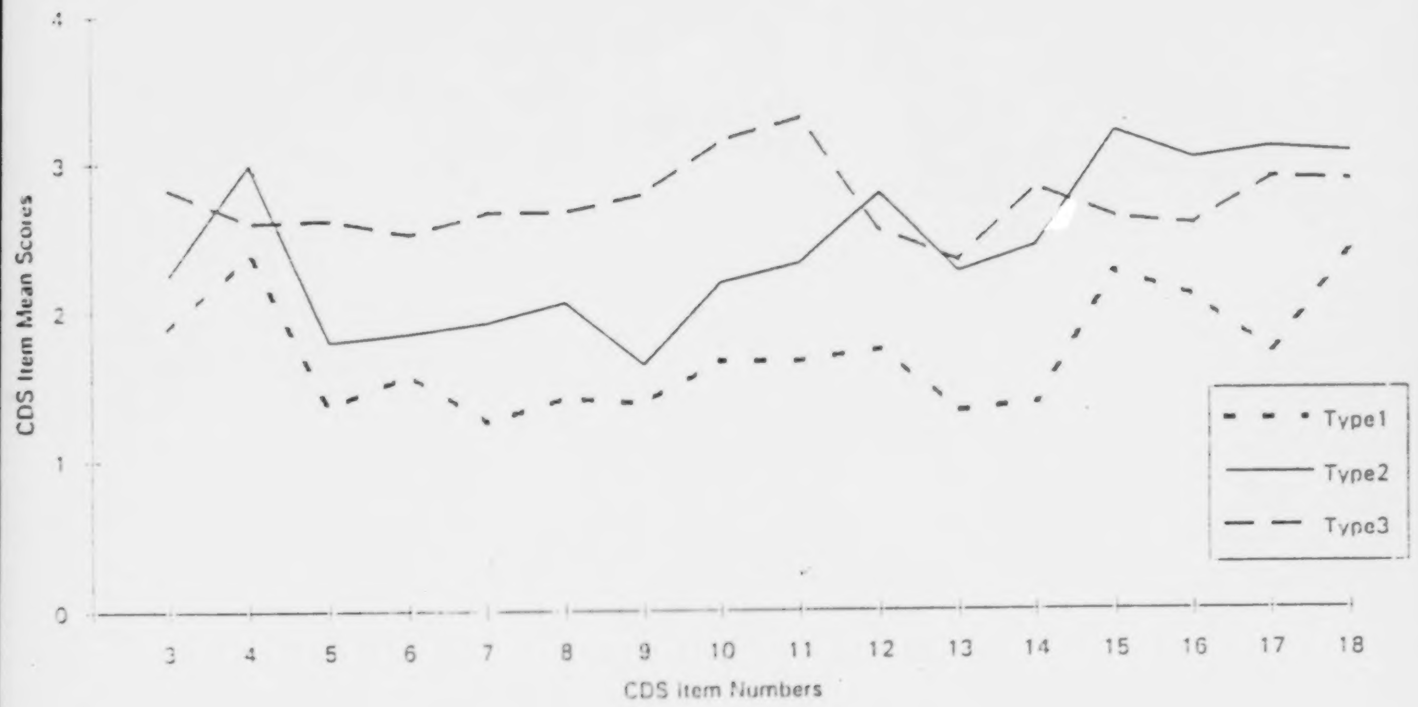
Career Indecision Type Identification Guidelines and Classification Rules for Adolescents

Indecision Type	Identification Guidelines
1	**Tentatively Decided-Crystallizing Preferences** Low, flat profile with most CDS item means under 1.75 Peak scores of 2.25 or greater on Items 4, 15, and 18 CDS Indecision Scale scores of 30 or less Developmentally mature career attitudes and competence
2	**Transitional Indecision** Relatively high, spiked profile with peaks on Items 15,16, 17, and 18 Widely varying CDS item means ranging from 1.63 to 3.19 Overall CDS scores range from 31-41 (M=38.60) Developmentally mature career attitudes Inconsistent development in career maturity competence
3	**Chronic Indecision/Impaired Development** Gradually rising high profile to peaks on Items 10 and 11 CDS item means ranging from 2.33 to 3.29 (M=43.59) CDS Indecision Scale scores of 41 or greater Developmentally immature career attitudes and competence

Note. The overall structure and development of identification guidelines for career indecision types of rural adolescents was influenced by a similar description advanced by Savickas and Jarjoura (1991) to describe career indecision clusters for college-aged students.

Figure Caption

Figure 1. Profiles of three indecision types for rural adolescents using cluster mean scores of individual Career Decision Scale items.



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PERCEPTIONS OF REGULAR AND SPECIAL POPULATION STUDENTS TOWARD ENROLLMENT PRACTICES AND CAREER VALUE OF THEIR CURRENT VOCATIONAL EDUCATION PROGRAM

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Introduction, Significance, and Statement of the Problem

The careers of the future will demand a higher level of education than ever before in order to meet the demands of technological change in industry and society. According to the U.S. Department of Labor (1989), the most rapid growth in the job sector will be in areas traditionally served by vocational education. Therefore, vocational education is in the position to play an increasingly important role in the preparation of tomorrow's workforce. However, serious questions have been posed as to how students are enrolled in vocational education courses.

Vocational education has been both a critic and an advocate of guidance and counseling (Feller, 1986). One response to the recent educational reform movement was a call for a comprehensive guidance program to provide information concerning jobs for all students (National Commission on Secondary Vocational Education, 1984). Peer (1985) concluded that guidance counselors in high schools were pre-occupied with the college-bound student, and Campbell, Basinger, Dauner, and Parks (1986) and Kaufman and Lewis (1968) found that vocational students received less vocational or career guidance than nonvocational students. Palmo and Devantier (1976) reported that many vocational students were dissatisfied, confused, or unaware of career alternatives available to them. Kinnier and Krumboltz (1984, p. 5) concluded that secondary vocational education students (a) acquire inaccurate information about themselves and careers; (b) are uncertain about their priorities, abilities, and interests; (c) live in a world where a wealth of occupational information is available, but find it difficult to ask pertinent questions and to penetrate the overwhelming mass of information; (d) do not have a systematic method for making career decisions; and (e) find that they are ill-prepared for searching for and obtaining a job. While students who are members of special populations must be provided with information concerning opportunities in vocational education, requirements for completion of vocational programs, and career opportunities, (AVA, 1990) questions remain concerning the adequacy of this information in formulating career decisions for special population students. Furthermore, questions involving the decision-making process for all students that leads to enrollment in vocational education remain unanswered.

High school vocational education enrollments show that the number of students completing sequenced courses declines with the disadvantaged student population in all vocational program areas except business and office education (Hicks, 1989). Hicks also found that the poorer the school district, the higher the representation of disadvantaged students, with a disproportionate number of disadvantaged students found in consumer home economics and agriculture. Campbell, et. al (1986) also reported that as socioeconomic status increased, students were less likely to enroll in vocational education courses. Vocational educators must be assured that vocational programs are available for all students, regardless of academic or socioeconomic status. In addition, the vocational programs offered to students must be perceived by students as having career value.

Theoretical Base and Related Literature

The theoretical base for this study lies in the area of career development and decision-making of adolescents. Ginzberg, Ginzberg, Axelrad, and Herma (1951) viewed career development as a process that culminated in an occupational choice. They identified four sets of variables that influenced career development as individual values, emotional factors, educational factors, and the effect of reality through environmental pressures. Super (1969) added to these variables the students' interest in specific vocations. Herr (1977) suggested that career plans are the results of occupations being presented visually in sex-role stereotyping by textbooks, visuals, and teacher examples. Herr and Cramer (1992) felt high school students perceptions of reality were major factors in decision-making, especially as major choices such as postsecondary education, attending college, entering the military, or full time employment became imminent.

Research related to enrollment in vocational education has focused upon barriers to enrollment in vocational education and influences upon students in selecting vocational courses. Akamine and Dillard (1986) grouped barriers into four major categories: (a) significant others, (b) personal characteristics of the student, (c) economic factors, and (d) institutional factors. They found parents were the most influential individuals in encouraging students to enroll in vocational education. Numerous studies have reported parents as the most significant others in students' choices of vocational courses (Alden and Sieferth, 1979; Brown, 1970; Davies and Kandel, 1981; Houser, 1980; Kane and Frazee, 1978; Kendall, 1984; Dillard and Campbell, 1981; Otto and Call, 1985). The influence of role models on career choice was also found by Brunkan (1965), Kerckhoff and Huff (1974), and Picou and Carter (1976). Kendall (1984) found that guidance counselors were not very effective in convincing students to enroll in nontraditional vocational courses for their gender. Scheduling students into classes they want and need was found to be the largest barrier to enrollment in vocational programs by Frazier (1983). Additional institutional barriers were found by Akamine and Dillard (1986).

Purpose of the Study

In North Carolina there is little information collected to determine enrollment practices involving program placement of vocational education students, except for one question on a follow-up of program completers. More information was needed from students who were possibly experiencing enrollment problems on an annual basis. Students' perceptions of the process that led to their enrollment in vocational education courses could provide valuable insight into how students select vocational education courses. It is also important to determine if students feel their current vocational courses are related to their career plans. Since a disparity appears to exist in the enrollment of special population students in some vocational education programs, a comparison of the perceptions of regular and special population students perceptions of enrollment practices may provide valuable information for vocational educators as they assess the methods used to make vocational education accessible to all students.

The purpose of this study was to examine the perceptions of regular and special population students toward enrollment practices and the career value of their current vocational education programs. More specifically, the study addressed the following research questions:

1. What are the students' perceptions toward practices used in enrollment in their current vocational education courses?
2. What are the students' perceptions toward the career value of their current vocational education courses?

3. Do differences exist between the perceptions of special population students and regular students relative to enrollment practices and career value of vocational education?

4. Do student perceptions toward enrollment practices differ depending upon the vocational program area, gender, grade level, or ethnic origin of the students?

Research Methods and Procedures

The research design utilized in this study was descriptive in nature. The target population included the high school vocational students in the state of North Carolina. In order to examine possible differences in perceptions of regular and special population students, a finite population correction was made for each vocational program area to insure proportional percentages of special population students were included in the sample. Twenty school sites were selected to obtain the necessary sample size, using Cochran's (1977) sampling formula. A total of 900 high school vocational education students provided data for this study.

The survey instrument for the study was developed by the researcher and consisted of three parts. Part I contained statements concerning vocational education enrollment practices; Part II consisted of additional enrollment opinions and considerations; while items in Part III addressed student perceptions of the career value of vocational education. Content validity for the instrument was established by a panel of experts consisting of special population coordinators and guidance counselors. A pilot test involving 47 students in four randomly selected vocational program areas was conducted to establish the instrument reliability. The questionnaire was administered to the students in the pilot test at a two-week interval in order determine instrument stability. The coefficients of stability established in the pilot test were as follows: Part I, $r = .77$; Part II, $r = .75$; and Part III, $r = .76$.

The questionnaires, administration instructions, and scantron sheets were mailed to participating schools in mid-April. Three late responding vocational directors were contacted as a follow-up procedure. A return rate of 89% was realized using this procedure. Data were analyzed using descriptive statistics, multivariate analysis of variance (MANOVA), and appropriate post-hoc statistics.

Findings and Conclusions

Of the 900 respondents, 451 were male and 449 were female. Twelfth grade students composed 35% of the data sample, with the smallest percentage of students (10%) as ninth grade students. One-third of the respondents were classified as special population students. Two-thirds of the respondents were white, 31 % were African American, and the remainder of the respondents were Hispanic, Native-American, and Asian. Since the Hispanic, Native-American, and Asian ethnic groups represented less than 3% of the total sample, these ethnic groups were combined for the purpose of data analysis.

Students were asked to report their level of agreement with several statements involving their experience with enrollment practices relating to vocational education courses. The overall mean scores are reported in Table 1. Regarding enrollment practices related to vocational education courses, half of the students reported the course in which they were currently enrolled was part of a four-year plan, with a similar number reporting that they talked to their guidance counselor at least once a year to discuss career plans. The students agreed that their parents played an important role in their course selection and felt their parents supported their course selections. Students indicated they made their own decisions about which courses to complete, and 73% disagreed that they were placed in a course that was not their first choice by a guidance counselor. The strongest level of agreement for enrollment practices was for the statement that most students complete at least one vocational course before they graduate. Students disagreed that academic course requirements left little time for vocational courses.

Table 1

Overall Means for Vocational Student Enrollment Practices

Enrollment Practice	Mean	SD
Most students take at least one vocational course before they graduate.	3.24	0.79
Students at our school make their own decisions about what courses to take.	3.07	0.83
If career interest is involved, my guidance counselor tends to advise enrollment in vocational education.	2.96	0.87
Before registration, students receive information about vocational course content.	2.83	0.83
This course would be recommended by guidance for someone going to college.	2.83	0.88
If I were female, my parents would encourage enrollment in Auto Mechanics.	2.83	0.98
If I were male, my parents would encourage enrollment in Home Economics.	2.82	0.93
My parent/guardian helps select my courses.	2.63	0.99
This course is part of a four-year plan.	2.52	0.89
Academic course requirements have left little time for vocational electives.	2.41	0.95
I talk to my guidance counselor at least once a year about my career plans.	2.39	1.03
I do not feel my parent(s) know enough about vocational education to encourage enrollment, either way.	2.23	0.97
This course was not my first choice, rather it was suggested by my guidance counselor.	2.01	0.94

Note. Scale of Measurement: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.

Students were also asked to respond to statements related to their opinions of vocational education courses that may have had an impact on their decision to enroll in their current vocational education course. The mean scores for their levels of agreement with these opinion statements are reported in Table 2. Over half the vocational students did not feel parents of college-bound students would encourage their children to enroll in vocational courses or that "smart" students would enroll in vocational education. Half of the students agreed with the statement "if I have heard a course is hard, I will try to select one which I think is easier to pass." Almost 60% of the students agreed that the hands-on activities in vocational education courses was a consideration in their enrollment.

Table 2

Overall Means for Vocational Student Opinions of Vocational Education Courses

Opinion	Mean	SD
I feel I can successfully complete the requirements of this class.	3.33	0.77
My vocational teacher assists students who work at a slower pace.	2.82	0.96
I enrolled in vocational education because of the hands-on activities.	2.73	0.93
I feel parents of college students are reluctant to suggest enrollment in vocational courses.	2.55	0.87
I tend to select easier courses.	2.50	0.94
Students who speak a different language are likely to be in vocational education courses.	2.41	0.83
Students who are smart are likely to be enrolled in vocational education.	2.34	0.88
I enrolled in this course because I heard there was not a lot of homework.	2.14	0.97
I took this class because I heard it did not involve a lot of reading or notetaking.	2.00	0.86
Money or fee requirements have kept me from participating in vocational education.	1.94	0.94
I took this class because I heard there was not a lot of math involved.	1.93	0.90

Note. Scale of Measurement: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.

The top three reasons for enrollment in a vocational course were: (a) related to my career objective (42%); (b) heard it was an interesting course (23%); and (c) friends recommended the course (8%). When asked how students learned about the course, the top three responses were: (a) friends (28%); (b) printed materials (20%); and (c) guidance counselors (15%).

The students were asked to respond to statements related to the perceived career value of the vocational course in which they were enrolled. The mean scores for their level of agreement with the career value statements are presented in Table 3. Regarding the career value of their vocational courses, the students strongly agreed that the course would be useful in their life and important to their long-range goals. Over 75% of the students felt it would be easy to get a job in their vocational area. Students also felt vocational teachers kept them aware of changes in the workplace. They strongly disagreed that their vocational program led to low-skilled, low-paying jobs.

Table 3

Overall Means for Vocational Student Perceptions of Career Value of Their Vocational Courses

Career Value Statement	Mean	SD
The material in this class will be useful to my life.	3.41	0.80
This course is valuable in preparing for a career in this field.	3.37	0.81
This program prepares students well for further education.	3.11	0.76
My teacher has discussed various types of careers related to this course.	3.03	0.82
I do not feel it would be a problem for me to get a job in an area related to this course.	2.96	0.85
My vocational teacher tries to keep student aware of work place changes.	2.94	0.84
The requirements of this course are important to my long range goals.	2.87	0.88
I have heard from employers and professionals about my course's value.	2.74	0.87
I feel this course will lead to low skilled, low paying jobs.	1.79	0.93

Note. Scale of Measurement: 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree.

Multivariate analysis of variance found that there were no differences in perceptions of enrollment practices or career value of vocational education between regular and special population students. The Hotellings $T^2 = 0.007$ [$F = 2.14$ (3, 894), $p = .09$]. Significant differences were found among perceptions of students enrolled in different vocational program areas for eight enrollment practice items [Wilks Lambda = 0.965, $F = 10.91$ (3, 894), $p = .0001$]. Follow-up analyses showed that the differences were only in the students' perceptions of vocational education enrollment practices. Differences in perceptions [Hotellings $T^2 = 0.067$, $F = 19.98$ (1, 897), $p = .0001$] were also found for male and female students on a majority of the items, with female students having more positive perceptions of enrollment practices and of the career value of vocational education courses. Students from different ethnic backgrounds also reported different perceptions of some enrollment practices, as did students of different grade levels.

The following conclusions were based upon the findings of the study:

1. Regular and special population students have similar perceptions toward enrollment practices and career value of their current vocational courses.

2. Enrollment decisions are often left to the discretion of the student, rather than supervised by a trained counselor.

3. Vocational education is not perceived by vocational students as equal status to academic education.

4. The primary reasons for students' enrollment in vocational education were the amount of hands-on instruction, the relationship to their career objective, personal interest in the course, and recommendations by other students.

5. Perceptions of specific enrollment practices are influenced by the vocational program area in which the students are enrolled, gender, and ethnic origin.

Implications and Recommendations

Vocational education students in North Carolina exhibited positive self confidence with respect to ability to successfully complete their vocational courses, yet an esteem barrier seemed to be evident since a large percentage of students did not feel parents of college-bound students would encourage enrollment in vocational courses. Nor did they feel that "smart" students enrolled in vocational courses. While the respondents overwhelmingly stated they were making their own course selections, a significant number stated they would select an easier course, rather than one that would be difficult to pass. This finding is an indication that vocational education students were devaluing their ability and the vocational programs.

While some vocational program areas tend to experience higher percentages of enrollment of special population students, this study found that this was not the result of guidance counselors "placing" special population students in these courses. Rather, these courses were selected by the students themselves. Since special population and regular students had similar perceptions toward enrollment practices, vocational educators must address the vocational population as a whole in examining other factors that account for individual program area enrollment patterns.

Due to the fact that students are receiving information from guidance counselors related to vocational courses, additional staff development should be provided for counselors to keep them up-to-date on technological changes, career opportunities, and skill requirements for vocational programs. Counselors should be required to meet with each student at least once a year to discuss career plans and appropriate course selections. Counselors should also assist students in developing a written four-year career development plan at the time they enter high school.

Since students enroll in vocational education because of career opportunities, vocational educators must do a better job of publicizing career information related to vocational programs. Mass media should be used to publicize changes in vocational education and the many career opportunities. Vocational teachers should be encouraged to do a better job of promoting their programs. Vocational teachers should be our best salespeople, yet they were rarely mentioned by the students as sources of information that led to enrollment.

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ANALYSES OF STUDENTS' CLASSROOM EXPERIENCES IN VOCATIONAL AND ACADEMIC CLASSES

Research Paper Presentation

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ANALYSES OF STUDENTS' CLASSROOM EXPERIENCES IN VOCATIONAL AND ACADEMIC CLASSES

Objectives:

Since 1987, the Southern Regional Education Board-Vocational Education Consortium has undertaken an extensive effort to improve instruction that students enrolled in high school vocational programs receive. The overall goal of the Consortium is to advance, apply, and evaluate instructional approaches used by both vocational and academic teachers that will improve work-related competencies of the students. By 1993, the consortium included 19 states with more than 55 pilot sites involved in the delivery of vocational education at the secondary level. A variety of methods for evaluating the outcomes of the instructional intervention strategies tried at the pilot sites were used. They included administering the National Assessment of Educational Progress tests, assembling transcript data, conducting follow-up studies, surveying and interviewing teachers and administrators, and completing classroom observation data. For five years, 1989 through 1993, classroom observations at the 3 Virginia sites were completed in classes of vocational and academic teachers.

The purpose of the observations was to provide insight into the instructional environment the students were experiencing. For the observations, frequency of occurrence of events were recorded. The objectives for completing the observations included:

1. To compare instructional emphases in vocational and academic classes, including focus, complexity, and extent of feedback;
2. To compare teaching activities in vocational and academic classes, including student groupings, interactions, and degree of autonomy; and
3. To compare types of evaluation used in vocational and academic classes.

Perspectives:

As Weber, Puleo, Kurth, Fisch, and Schaffner (1988) stated, "The current press for strengthening components in vocational programs can be traced to major changes, both in the nation's competitive posture and in the work place itself, which occurred in the early 1980s (p. 130). They note that these changes have led to increased interest in the appropriateness of our educational system which led to a number of reports on the "rights" and "wrongs" of it and how to achieve excellence in it. As part of the excellence movement, the suggestions offered generally were "more academic rigor" for all students. Yet the authors of the The Unfinished Agenda (1984) questioned the assumption "...that more academics, which may be the best preparation for college, is also the best preparation for life" (p. 1). The recent Secretary's Commission on Achieving Necessary Skills report, commonly referred to as the SCANS report (What Work Requires..., 1991), clearly reinforces the incorrectness of the assumption. The report states that work place know-how skills, ones effective workers need, are much broader than those learned through instruction focusing solely on academics.

Daggett (1984) argues that any dramatic improvements in the preparation of students, especially those who are not college bound, may require major changes in what is taught, when it is taught, and how it is taught, not simply increases in academic course requirements and higher test scores. From a study that included observations of instruction in 649 vocational and 244 academic classrooms completed by Weber, et al. (1988) the investigators concluded that vocational classrooms appear to provide frequent and varied opportunities for strengthening students' basic and higher-order skills, but teachers and students do not appear to capitalize on these opportunities. Thus, a need exists to document more fully just what and how students in vocational and academic classrooms are taught in high school settings.

Research Methods and Data Sources:

At the 3 Virginia sites, observations of instruction were completed in the classes of both vocational and academic teachers in the Spring of 1989, 1990, 1991, 1992, and 1993 by teams of trained observers. A total of 727 classes with more than 11,500 students in attendance were observed. For each class observed, 4 snapshots, each consisting of 1 to 4 episodes, were recorded. A snapshot represents a point-in-time while the episodes explain instructional "process" activities which occur over time and detail the content, depth, and complexity of the instruction taking place within each snapshot. In recording episodes within snapshots, the episodes involving the largest number of students were recorded first then the second largest number, and so on. In 1989, interrater reliability was established for the observation procedures. When observers recorded information for the same episode, extent of agreement ranged form 65.6% to 100%, with agreement of observation data recorded lower than 75% for only 3 of the 23 variables.

Procedures for recording the data were adapted from those used by Weber, et al. (1988). Major changes from the procedures they used were that more information about the instruction in basic academic competencies was recorded and some items of information about classroom detail were eliminated. Further, the procedures for recording the data were adapted for use of op-scan sheets to facilitate data entry and analysis. As with the Weber, et al. study, episodes served as bases for the analyses.

One-way analyses of variance procedures were used to determine differences in the variables recorded between vocational and academic classes. In addition, one-way ANOVAs were used to examine differences in variables for classes in eight instructional areas as follows: English, Mathematics, Social Studies, Science, Agriculture and Trade and Industrial, Business and Marketing, Home Economics, and Technology Education. Chi square outcomes indicated that activities in the small number of Agriculture classes were similar to those in the Trade and Industrial classes for the variables recorded. Thus, outcomes for the two vocational areas were combined. The average number of instructional episodes for the vocational classes was greater than the academic classes, 7.8 versus 6.0. This greater number of episodes does not necessarily mean, however, that more instruction was taking place in the vocational classes. Rather it indicates that students were involved in a greater variety of activities. Thus, the ANOVA calculations were based on percentage of episodes per class documented for a given activity. Student-Newman-Keuls test procedures were used to determine means that were significantly different from one another.

Results:

ANOVA outcomes comparing activities in classes in the eight instructional areas for variables related to instructional emphases follow:

Variable	P > F
Technical skills theory focus of instruction	.0001
Technical skills practice focus of instruction	.0001
Basic academic skills focus of instruction	.0001
Other subject area focus of instruction	.0001
Complexity of task	.0001
Extent of feedback received	.6885
Extent of autonomy	.0001

ANOVA outcomes comparing activities in classes in the eight instructional areas for variables related to teaching activities follow:

Variable	P > F
Interaction, teacher to student	.0001
Interaction, student to student	.0001
No interaction taking place	.0058
Students grouped individually	.0001
Students in small groups	.0001
Students in large groups	.0006
Total class grouped	.0001
Teaching activity discussion	.0001
Teaching activity lecture	.0019
Teaching activity practice/performance physical	.0001
Teaching activity practice/performance verbal	.0001

ANOVA outcomes comparing activities in eight instructional areas for variables related to evaluation follow:

Variable	P > F
Open ended pencil and paper evaluation	.0001
Objective pencil and paper evaluation	.0001
Task demonstration evaluation	.0001
Evaluation of a product	.2345

Details of the ANOVA outcomes are presented in Tables 1 through 6.

Conclusions and Implications:

This study builds on previous research and provides insight as to the extent that the current high school instructional climate is compatible with teaching work place skills, such as those detailed in the SCANS report (What Work Requires..., 1991). The outcomes, as one might expect, indicate that technical skills theory and practice are more likely to be the focus of instruction in vocational classes than basic academic skills or other subject area content. However, students in academic classes were more likely than vocational students to be involved in completing tasks designated as complex. Students in vocational classes were more likely to complete tasks designated as simple. This finding indicates that vocational teachers may want to examine more carefully the tasks their students complete to see if more emphasis can be given to completing more complex tasks.

As for teaching activities, vocational teachers were more likely than academic teachers to be leading the instruction or have their students working without interacting with one another. Also, students in vocational classes were more likely to be interacting with one another than students in academic classes. Further, they experienced a greater degree of autonomy. Academic teachers, on the other hand, were more likely to be lecturing than vocational teachers. Thus, academic teachers need to examine ways they work with their students to determine if they can do more to create a classroom environment more conducive to developing skills students' need for today's workplace.

The data collected provide a wealth of information about the type and quality of instruction students at the three pilot-site schools received in the vocational and academic classes. The procedures developed for completing the observations have proven to be manageable and the data collected usable. Careful training of the observers was critical to the study. Outcomes of it reveal the current nature of classroom instruction and provide a basis from which to implement change.

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Table 1

Analyses of Variance Outcomes for Focus of Instruction

Nature of Episodes Type of Class	n[a]	Mean	df	F value	P>F
Technical skills theory			7, 658	6.60	.0001
Agriculture/Trade	106	.22 AB[b]			
Business/Marketing	92	.26 A			
English	149	.08 B			
Home Economics	37	.25 A			
Mathematics	122	.09 B			
Science	79	.12 B			
Social Studies	39	.14 AB			
Technology	42	.21 AB			
Technical skills practice			7, 658	51.59	.0001
Agriculture/Trade	106	.52 A			
Business/Marketing	92	.43 A			
English	149	.07 C			
Home Economics	37	.24 B			
Mathematics	122	.09 C			
Science	79	.04 C			
Social Studies	39	.08 C			
Technology	42	.51 A			
Basic academic skills			7, 658	43.06	.0001
Agriculture/Trade	106	.04 C			
Business/Marketing	92	.06 C			
English	149	.44 A			
Home Economics	37	.13 BC			
Mathematics	122	.51 A			
Science	79	.49 A			
Social Studies	39	.19 B			
Technology	42	.04 C			
Other content			7, 658	8.94	.0001
Agriculture/Trade	106	.02 C			
Business/Marketing	92	.06 BC			
English	149	.16 B			
Home Economics	37	.14 BC			
Mathematics	122	.09 BC			
Science	79	.12 BC			
Social Studies	39	.34 A			
Technology	42	.04 BC			

[a] Number of classes

[b] Means with same letters are not significantly different.

Table 2

Analyses of Variance Outcomes for Task Complexity, Feedback, and Autonomy

Nature of Episodes Type of Class	n[a]	Mean	df	F value	P>F
Task complexity at simple level			7, 645	6.42	.0001
Agriculture/Trade	103	.43 BC[b]			
Business/Marketing	88	.60 AB			
English	147	.54 AB			
Home Economics	36	.71 A			
Mathematics	122	.67 A			
Science	77	.60 AB			
Social Studies	39	.65 A			
Technology	41	.31 C			
Extent of feedback			7, 591	.68	.6885
Agriculture/Trade	94	.79 A			
Business/Marketing	87	.70 A			
English	127	.75 A			
Home Economics	36	.75 A			
Mathematics	112	.78 A			
Science	70	.75 A			
Social Studies	37	.75 A			
Technology	36	.77 A			
Autonomy, little (1) to extensive (3)			7, 653	9.93	.0001
Agriculture/Trade	105	2.42 A			
Business/Marketing	91	2.16 B			
English	148	2.18 B			
Home Economics	36	2.02 B			
Mathematics	122	2.03 B			
Science	79	2.01 B			
Social Studies	39	2.08 B			
Technology	41	2.52 A			

[a] Number of classes

[b] Means with same letters are not significantly different.

Table 3

Analyses of Variance Outcomes for Class Interactions

Nature of Episodes Type of Class	n[a]	Mean	df	F value	P>F
Teacher to student			7, 652	4.32	.0001
Agriculture/Trade	105	.34 B[b]			
Business/Marketing	92	.45 AB			
English	147	.50 A			
Home Economics	37	.44 AB			
Mathematics	122	.51 A			
Science	78	.57 A			
Social Studies	38	.51 A			
Technology	41	.43 AB			
Student to student interaction			7, 652	4.45	.0001
Agriculture/Trade	105	.24 A			
Business/Marketing	92	.06 B			
English	147	.17 AB			
Home Economics	37	.16 AB			
Mathematics	122	.14 AB			
Science	78	.13 AB			
Social Studies	38	.21 A			
Technology	41	.19 A			
No interactions			7, 652	2.88	.0058
Agriculture/Trade	105	.28 A			
Business/Marketing	92	.36 A			
English	147	.24 A			
Home Economics	37	.37 A			
Mathematics	122	.24 A			
Science	78	.23 A			
Social Studies	38	.23 A			
Technology	41	.34 A			

[a] Number of classes

[b] Means with same letters are not significantly different.

Table 4

Analyses of Variance Outcomes for Class Groupings

Nature of Episodes Type of Class	n[a]	Mean	df	F value	P>F
Students grouped individually			7, 658	6.15	.0001
Agriculture/Trade	106	.24 AB[b]			
Business/Marketing	92	.28 A			
English	149	.16 B			
Home Economics	37	.32 A			
Mathematics	122	.17 B			
Science	79	.13 B			
Social Studies	39	.15 B			
Technology	42	.32 A			
Students in small groups			7, 658	7.43	.0001
Agriculture/Trade	106	.45 A			
Business/Marketing	92	.17 C			
English	149	.28 BC			
Home Economics	37	.28 BC			
Mathematics	122	.27 BC			
Science	79	.22 C			
Social Studies	39	.28 BC			
Technology	42	.37 AB			
Students in large groups			7, 658	3.69	.0006
Agriculture/Trade	106	.04 B			
Business/Marketing	92	.10 AB			
English	149	.13 AB			
Home Economics	37	.07 B			
Mathematics	122	.14 AB			
Science	79	.14 AB			
Social Studies	39	.17 A			
Technology	42	.08 AB			
Total class grouped			7, 658	4.91	.0001
Agriculture/Trade	106	.27 BC			
Business/Marketing	92	.44 AB			
English	149	.43 AB			
Home Economics	37	.33 ABC			
Mathematics	122	.42 AB			
Science	79	.51 A			
Social Studies	39	.39 AB			
Technology	42	.23 C			

[a] Number of classes

[b] Means with same letters are not significantly different.

Table 5

Analyses of Variance Outcomes for Teaching Activities

Nature of Episodes Type of Class	n[a]	Mean	df	F value	P>F
Discussion			7, 657	4.37	.0001
Agriculture/Trade	105	.13 B[b]			
Business/Marketing	92	.27 AB			
English	149	.24 AB			
Home Economics	37	.21 AB			
Mathematics	122	.22 AB			
Science	79	.26 AB			
Social Studies	39	.34 A			
Technology	42	.12 B			
Lecture			7, 657	3.29	.0019
Agriculture/Trade	105	.07 B			
Business/Marketing	92	.11 AB			
English	149	.13 AB			
Home Economics	37	.06 B			
Mathematics	122	.08 B			
Science	79	.19 A			
Social Studies	39	.14 AB			
Technology	42	.07 B			
Practice/Performance physical			7, 657	49.34	.0001
Agriculture/Trade	105	.54 A			
Business/Marketing	92	.26 C			
English	149	.02 D			
Home Economics	37	.18 C			
Mathematics	122	.05 D			
Science	79	.07 D			
Social Studies	39	.00 D			
Technology	42	.39 B			
Practice/Performance verbal			7, 657	5.54	.0001
Agriculture/Trade	105	.04 B			
Business/Marketing	92	.17 A			
English	149	.16 A			
Home Economics	37	.08 AB			
Mathematics	122	.19 A			
Science	79	.11 AB			
Social Studies	39	.08 AB			
Technology	42	.12 AB			

[a] Number of classes

[b] Means with same letters are not significantly different.

Table 6

Analyses of Variance Outcomes for Methods of Evaluation

Nature of Episodes Type of Class	n[a]	Mean	df	F value	P>F
Open ended paper and pencil			7, 341	4.34	.0001
Agriculture/Trade	57	.05 B[b]			
Business/Marketing	48	.01 B			
English	76	.19 AB			
Home Economics	15	.07 B			
Mathematics	81	.07 B			
Science	32	.12 B			
Social Studies	18	.30 A			
Technology	22	.01 B			
Objective type paper and pencil			7, 341	7.81	.0001
Agriculture/Trade	57	.16 B			
Business/Marketing	48	.17 B			
English	76	.22 B			
Home Economics	15	.57 B			
Mathematics	81	.51 A			
Science	32	.27 B			
Social Studies	18	.34 AB			
Technology	22	.05 B			
Demonstration of a task			7, 341	5.82	.0001
Agriculture/Trade	57	.49 AB			
Business/Marketing	48	.46 AB			
English	76	.40 AB			
Home Economics	15	.20 BC			
Mathematics	81	.30 BC			
Science	32	.22 BC			
Social Studies	18	.04 C			
Technology	22	.62 A			
Evaluation of a product			7, 341	1.33	.2345
Agriculture/Trade	57	.29 A			
Business/Marketing	48	.35 A			
English	76	.19 A			
Home Economics	15	.17 A			
Mathematics	81	.20 A			
Science	32	.32 A			
Social Studies	18	.31 A			
Technology	22	.32 A			

[a] Number of classes

[b] Means with same letters are not significantly different.

Teacher Use of Assessment Information in Ohio Vocational Education Programs

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Introduction, Significance, and Conceptual Base

There has been widespread concern voiced throughout the country about low achievement among the nation's school children. The National Commission on Excellence in Education (1983) declared the United States to be a nation at risk, awash in a rising tide of mediocrity. Since that time there has been no lack of reports criticizing curriculum, administrators, teachers, parents, and students. Concerns for international competitiveness, renewed calls for restructuring, and the accountability movement has prompted a search for the means to achieve excellence in our schools.

In response to requests for change, educational organizations around the country have sought ways to document the effectiveness of their educational programs. State after state has sought to initiate mechanisms which serve to promote accountability for educational outcomes. California, Connecticut, Iowa, Kansas, Maryland, and New Jersey have taken measures to make their educational systems more accountable for student outcomes (McCaslin, 1990). *The Action Plan for Accelerating the Modernization of Vocational Education in Ohio* (Ohio Department of Education, 1990) required that a comprehensive accountability and evaluation system be developed and integrated with the statewide management information system.

On the federal level, the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 required accountability of all states who accept federal funds to support vocational programs. This was to be achieved through a system of specified performance measures and standards which track both academic and occupational competency gains.

Testing at all grade levels has increased due to accountability demands, the information demands of objective-based instructional systems, and competency-based evaluation trends (Green & Stager, 1986). Norm-referenced standardized tests have become the tool of choice in obtaining data for decision making at the state and local level. Those in favor of standardized testing have asserted that such tests promote high standards for learning, facilitate more accurate placement decisions, yield information for the improvement of curriculum and instruction, and help the public hold schools accountable (Dorr-Bremme, 1983).

Standardized testing in American schools has been and continues to be a subject of controversy from the local to the national level. Such tests have proven to be a time and cost effective means for measuring achievement however questions have arisen when significant emphasis was placed on the outcomes of these assessment methods. Worthen and Spandel (1991) have implied that standardized tests do have value when used correctly but provide only part of the picture and have their limits.

Statewide assessment cannot attempt to measure and thereby reflect all that local schools are able to achieve in terms of student outcomes. It has become necessary for schools to measure the attainment of their unique educational objectives (Perlman, 1991). Public outcries for school reform have increased the pressure on teachers to not only construct tests to assess students mastery of skills but to also promote more rigid standards for student accountability (Carter, 1984).

It has become necessary to document that students have more than seat time to account for the learning that was to have taken place in the classroom or laboratory. How teachers use assessment information in the classroom and whether its use is effective can play a major role in enhancing and documenting both instruction and learning. How are vocational education teachers using student assessment data? Literature has revealed very little about the assessment practices of this group of teachers. Only recently has the measurement community focused research emphasis upon teacher assessment practices in the academic classroom. Research conducted on the quality and effectiveness of non-vocational teacher training in measurement and assessment has implied that these teachers may not be gaining the appropriate skills necessary for effective use of assessment. If this is true for academic teachers what of the assessment skills of vocational education teachers?

The drive towards increased accountability has placed a demand on teachers to improve instruction and promote higher levels of achievement. To achieve these goals it is important to generate and utilize information which accurately measures effectiveness of instruction and the outcomes of learning. The more accurately teachers judge student achievement and performance the more effective they will be in directing student learning. An increased understanding of teacher practices in assessment use should aid in making more intelligent decisions in directing pupil progress toward worthwhile educational outcomes.

Purpose and Objectives of the Study

The purpose of this descriptive-correlational study was to describe Ohio secondary vocational education teachers' use of student assessment information in making instructional decisions. The specific objectives of this study were to:

1. Describe vocational education teachers' perceptions of their use of student assessment data for making instructional decisions.
2. Describe vocational education teachers' perceptions of their competence in the assessment process.
3. Describe vocational education teachers' perceptions of their attitude towards the assessment process.
4. Examine the relationship between teacher use of assessment information and level of competence in the assessment process, and their attitudes towards assessment.
5. Determine the proportion of variance in vocational education teachers' perceived use of assessment information in instructional decision making that could be explained by the independent variables of attitude towards assessment, competence in the assessment process, constraints to the assessment process, and selected teacher characteristics.

Methodology

The target population for this study was all teachers who taught full time, secondary vocational education programs in Ohio public schools. The study utilized a random sample of 393 secondary vocational education teachers stratified by program area.

A mailed questionnaire was designed by the investigator for use in measuring the variables of interest. To obtain a measure of the dependent variable, teacher use of student assessment information, respondents were asked to indicate the extent to which they use information derived from six types of assessment methods in addressing 10 different instructional decisions. The six types of assessment methods used in the study included; objective paper and pencil items, informal observations, standardized test scores, performance assessments, portfolios, and essay type items. The 10 decision areas where assessment results are commonly used were identified as: plan for instruction, diagnose student weakness, monitor student progress, communicate achievement, motivate students, evaluate instruction, evaluate instruction and instructional materials, group students, encourage self-assessment, and assign grades.

Teacher competence in the assessment process was measured with a series of competency statements based on "Standards for Teacher Competence in Educational Assessment of Students" (American Federation of Teachers, National Council on Measurement in Education, & National Education Association, 1990). A 5-point Likert scale, which ranged from "not competent" to "extremely competent", was used. Teacher attitudes towards assessment was measured using a semantic differential scale. The scale was comprised of nine bi-polar adjectives which described the concept "assessment".

A panel of experts was used to establish content and face validity. The 13 member panel was comprised of university faculty, doctoral students, vocational education teachers, and state department of education staff. Following a review of the instrument, recommendations provided by the panel were incorporated into the instrument where appropriate.

A revised instrument was pilot tested for reliability using a subsample of the population not selected for participation in the main study. A test-retest procedure was used with a two week interval between implementation. The results were compared for percent agreement with values that ranged from .64 to 1.0 for each item. Items were said to be in agreement if the score from the initial test was no more than ± 1.0 of the score on the retest. Measures of internal consistency were calculated from data obtained from the first phase of the test/retest procedure. Cronbach's Alpha ranged from .81 - .96 with a level of significance established a priori at .05.

Usable questionnaires were received from 290 participants during the six week data collection phase. With 100 participants not responding, a 74% response rate was achieved. Ten percent of the non-respondents were randomly selected and interviewed by phone. Differences between non-respondents and respondents on the dependent variable were examined with a t-test. No significant differences were found between groups on the dependent variable or on the selected teacher characteristics.

Pearson's r coefficient, was used to summarize the magnitude and direction of the relationship between variables. The conventions by Davis (1971) were used to describe the measures of association. Semi-partial, simultaneous multiple regression analysis was used to determine the variance in use of assessment information that was explained by selected independent variables.

Findings and Conclusions

The descriptive statistics related to use of assessment information from each of the six assessment methods are presented in Table 1. Teachers rated information provided from performance assessments ($\underline{M}$=4.28) as being of more use in addressing day to day classroom decisions than information obtained from the other five assessment methods. This stands in slight contrast to Stiggins and Conklin (1992) who found that academic teachers placed more reliance on their own objective type assessment activities rather than on performance assessments for addressing instructional decisions. Given that vocational education teachers use a competency based curriculum, it was not surprising to the researcher that a performance based method of assessment was of more use than objective methods.

Prior studies in assessment use found that teacher made objective tests and informal observations were the assessment methods upon which academic teachers primarily relied (Dorr-Bremme and Herman, 1986; Stiggins & Bridgeford, 1985; Gullickson, 1984). The results from this research study, as indicated in Table 1, corroborate the findings from previous studies and supported the conclusion that vocational education teachers placed a heavy reliance on the use of objective paper and pencil methods ($\underline{M}$=4.10) and informal observations ($\underline{M}$=3.76).

Portfolios ($\underline{M}$=2.74) and essay type assessments ($\underline{M}$=2.53) were not found to be of much use for generating information in decision making (Table 1). Although portfolios continue to be promoted in education circles today vocational education teachers did not give particular emphasis to the information generated. Such a low reliance on portfolios may be accounted for by the relative newness of the assessment method. Vocational teachers may have yet to grasp the importance of a long term assessment method and build an assessment method of this type into their overall assessment system.

Standardized test scores ($\underline{M}$=2.26) were found to be the least used source of information for decision making (Table 1). This study supported the findings from other studies (Goslin, 1967; Yeh et al., 1981; Green, 1990; and others) regarding the lack of use of standardized test scores in addressing educational decisions. After years of standardized testing, the use of standardized test scores by vocational teachers continues to be minimal.

Table 1

Descriptive Statistics for the Use of Assessment Information Generated From Six Assessment Methods (n=290)[a]

Decision Areas	Objective Items		Standardized Test Scores		Performance Assessment		Informal Observation		Portfolios		Essay Items	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1.	3.68	.91	2.28	1.05	4.13	.91	4.04	.83	2.57	1.15	2.55	1.11
2.	3.79	.91	2.60	1.19	4.25	.85	4.25	.76	2.70	1.21	2.61	1.12
3.	3.93	.84	2.19	1.11	4.28	.87	4.20	.76	2.69	1.20	2.59	1.16
4.	3.91	1.01	2.40	1.19	4.31	.88	4.03	.93	3.06	1.36	2.46	1.18
5.	3.40	1.01	2.10	1.06	4.34	.83	4.20	.86	2.81	1.29	2.36	1.15
6.	4.02	.91	2.37	1.22	4.45	.73	4.31	.80	2.85	1.29	2.70	1.34
7.	3.67	1.02	2.27	1.19	4.15	.90	3.99	.95	2.62	1.26	2.51	1.25
8.	3.35	1.18	2.28	1.18	4.11	1.04	4.16	1.00	2.44	1.23	2.22	1.12
9.	3.67	1.08	2.19	1.23	4.27	.88	3.90	1.06	2.94	1.43	2.51	1.33
10.	4.17	.89	1.90	1.18	4.50	.74	3.94	1.14	2.77	1.42	2.77	1.34
Overall Means	**3.76**		**2.26**		**4.28**		**4.10**		**2.74**		**2.53**	

Note. [a]For each question up to five responses may have been missing.
Overall means were calculated by recoding missing cases to the mean.
Educational Decision Areas:

1. Plan for instruction
2. Diagnose student weakness
3. Monitor student progress
4. Communicate student achievement
5. Motivate students
6. Evaluate instruction
7. Evaluate instructional materials
8. Group students
9. Encourage self-assessment
10. Assign grades

The frequency distribution of vocational education teachers' competency scores is presented in Table 2. Vocational education teachers in this study reported that they perceived themselves to be moderately to very competent in the assessment process. Eight percent considered themselves to be extremely competent in the assessment process, 63% to be very competent, and 29% to be moderately competent. These results were congruent with findings by Gullickson and Hopkins (1987) which described teachers as being comfortable in their knowledge of assessment. Dorr-Bremme (1983) also concluded that teachers perceived their use of assessment techniques as accurately measuring the effects of their instruction.

Table 2
Frequency Distribution of Summed Teacher Competency Scores (n=290)

Scale Value	Summed Score	f	%
Not Competent	26 - 38	0	0.00
Slightly Competent	39 - 64	2	.69
Moderately Competent	65 - 90	84	28.97
Very Competent	91 - 116	182	62.76
Extremely Competent	117 - 130	22	7.59
Mean= 97.24	SD= 12.89	Minimum= 61	Maximum= 130

An analysis of teacher attitude towards assessment is presented in Table 3. The majority of teachers (59%) reported having a positive attitude towards assessment (M=41.6). Thirty percent of the teachers reported being neutral in their attitude towards assessment and 12% percent perceived themselves to have a negative attitude towards assessment. The generally positive attitudes found by this study are in agreement with current findings (Green, 1990 & Green and Stager, 1986) where opinions of both experienced and preservice academic teachers towards classroom assessment were positive.

Table 3
Frequencies for Teacher Attitude Towards Assessment Scores (n=290)

Summed Attitude Scores		f	%
9 - 13	Most negative attitude	1	.34
14 - 22		1	.34
23 - 31		33	11.38
32 - 40	Neutral	86	29.66
41 - 49		126	43.45
50 - 58		43	14.83
59 - 63	Most positive attitude	0	.00
	Mean= 41.6		

The correlational analysis between competence in assessment, attitude towards assessment, and use of individual assessment methods is presented in Table 4. Competence in assessment had a moderately positive association with teachers' use of information from objective paper and pencil methods and performance assessments and a low positive association with use of informal observations. Attitude towards assessment had a low association with the use of performance assessments. Use of portfolios, standardized tests, and essay items had only a negligible association with competence in and attitude towards assessment.

Table 4
Intercorrelations Between Selected Independent Variables and Assessment Methods (n=290)

	Intercorrelations						
	X2	Y1	Y2	Y3	Y4	Y5	Y6
Competence (X1)	.27	.30	.05	.32	.20	.17	.18
Attitude (X2)	1.00	.17	.05	.26	.10	.11	.12
Objective (Y1)		1.00	.15	.26	.23	-.04	.27
Standardized (Y2)			1.00	.03	-.13	.30	.29
Performance (Y3)				1.00	.51	.21	.10
Informal (Y4)					1.00	.05	.05
Portfolio (Y5)						1.00	.28
Essay (Y6)							1.00

Regression analyses are found in Tables 5-7. Competence in assessment was found to contribute 7.1% of the variation in teachers use of objective paper and pencil methods (Table 5), 5.7% in use of performance assessment (Table 6), and 3.9% in use of informal observation (Table 7). Attitude towards assessment was found to explain only 3% of the variation in teachers use of performance assessments.

Table 5
Semi-Partial Regression of Use of Objective Paper and Pencil Assessment Methods on Selected Characteristics (n = 290)

Variables	sR^2	b	t	p
Competence	.071	.151	4.78	<.001
Attitude	.007	.076	1.49	.138
(Constant)		18.77		

Standard error = 6.637
R^2 = .115
Adjusted R^2 = .105
For model: F = 12.36, p<.001

Table 6
Semi-Partial Regression of Use of Performance Assessment on Selected Characteristics (n= 290)

Variables	sR^2	b	t	p
Competence	.057	.125	4.46	<.001
Attitude	.030	.146	3.23	.001
(Constant)		24.14		

Standard error = 7.726
R^2 = .201
Adjusted R^2 = .169
For model: F = 6.32, p<.001

Table 7

Regression of Use of Informal Observation on Competence in Assessment (n= 290)

Variables	r^2	b	t	p
Competence	.039	.090	3.40	<.001
(Constant)		32.230		

Standard error = 5.812 Adjusted r^2 = .035

r^2 = .039 For model: F = 11.54, p<.001

Implications and Recommendations

Through a review of literature, the findings of this study, and the subsequent conclusions the researcher has proposed the following recommendations:

1. Given the competency based nature of the programs in vocational education, and given the findings from this study which document the high level of use of performance assessments by vocational education teachers, it is recommended that teacher preservice assessment curriculum pay particular attention to the development of competence in the use of performance assessments.
2. Teachers are not using standardized test results yet it is expected that they use the results of current and upcoming standardized assessments for enhancing instruction and learning. Since the Ohio Department of Education is taking a leadership role in promoting the use of standardized assessment, it should also be responsible for promoting activities which will motivate and assist teachers in using standardized test information.
3. The use of portfolio assessment is currently being promoted in education circles as a means to complement point-in-time assessment techniques. Yet, the use of portfolio assessment was not shown to be of much use to vocational education teachers nor was there a relationship with any of the independent variables investigated. The researcher believes that vocational education teachers may only be in an awareness stage in terms of their adoption of the portfolio assessment method. It is recommended that research be conducted to further investigate the use of portfolio assessment in vocational education settings.
4. It was concluded that attitude towards the overall assessment process contributed little to understanding the use of assessment. It is recommended that future research focus on an examination of attitude towards use of specific assessment methods. Given the current trends in assessment it would be appropriate to focus research on vocational education teachers' attitude towards standardized testing and the use of authentic assessment methods.
5. Overall competence in assessment explained only a small proportion of the variation in teachers use of three of the most used assessment methods. It is recommended that a competency measure oriented toward a specific assessment method be used to more clearly identify specific strengths and weaknesses related to the use of that particular assessment method.

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Measuring Academic and Other Performance In Vocational Education: Approved Statewide Systems of Measures and Standards

A Research Paper

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In the last decade there has been an increasing level of dissatisfaction with the quality of public education in the United States. The initial sound of alarm regarding the inadequacies of our education system began with the release of A Nation at Risk (National Commission on Excellence in Education, 1983). Since that time several other National reports have signaled similar concerns (e.g., The William T. Grant Foundation Commission on Work, Family and Citizenship, 1988; Commission on Skills of the American Workforce, 1990; U. S. Department of Education, 1991; Secretary's Commission on Achieving Necessary Skills, 1991; Special Study Panel on Education Indicators, 1991; and Secretary's Commission on Achieving Necessary Skills, 1992). Each of these studies called for major changes in the U.S. educational system by stressing the gap between the demands of the future and the present level of preparedness of America's youth to meet these requirements.

Accompanying the need for improved educational programs was a call for better evidence regarding the accountability of public education. Accountability is defined as "responsibility for the justification of expenditures, decisions, or the results of one's own efforts" (Scriven 1991, p. 46). Accountability implies a relationship between program providers and those who are funding the program. As stated by Anderson and Ball (1978), accountability, "usually implies some obligation by the spenders to those whose money they are spending (or interests they are supposedly representing) to provide information about what they did, why they did it, and what the consequences were or are" (p. 212). This relationship of accountability is also emphasized by Hill and Bonan (1991):

> Accountability is a relationship between two persons in which four conditions apply: first, one person expects the other to perform a service or accomplish a goal; second, the person performing the activity accepts the legitimacy of the other's expectation; third, the person performing the activity derives some benefits from the relationship; and fourth, the person for whom the activity is performed has some capacity to affect the other's benefits. (p. 35)

As can be seen by the definitions cited above, the concept of accountability in education has been evident for some time and is becoming more widespread. In fact, as White (1990) explained:

> Accountability has become a guiding principle in the way states have approached new ways to improve education. Thus, systems to measure accountability have become a major `business' in The United States (Odden, 1990). Schools are expected to act like businesses, and account for their successes and failures; and though it has never been easy to apply quantitative measures to complex educational processes and outcomes, more and more school systems have been doing just that. (p. 1)

Accountability systems in education have traditionally relied on reviews of inputs and processes of the educational systems (McCaslin, 1990). However, as McCaslin indicated, the focus on accountability systems in education has been changing to one of assessing outcomes.

The movement toward more emphasis on accountability and evaluation has had an impact on vocational education. At the time of the hearings to reauthorize the Carl D. Perkins Vocational

Education Act, the Office of Technology Assessment (1989) reported that "there is now widespread consensus for including the vocational education system in the national debate over school reform and academic excellence" (p. 2).

Vocational education has considered accountability and evaluation essential activities for many years. Federal vocational education legislation from 1963 through 1984 included provisions for evaluating vocational programs.

The Carl D. Perkins Vocational and Applied Technology Education Act of 1990 continued to include evaluation specifications. It required states to develop core standards and measures of performance for secondary and postsecondary vocational education programs. These performance measures were to include:

(1) measures of learning and competency gains, including student progress in the achievement of basic and more advanced academic skills;

(2) 1 or more measures of performance, which shall include only--

(A) competency attainment;

(B) job or work skill attainment or enhancement including student progress in achieving occupational skills necessary to obtain employment in the field for which the student has been prepared, including occupational skills in the industry the student is preparing to enter;

(C) retention in school or completion of secondary school or its equivalent; and

(D) placement into additional training or education, military service, or employment;

> (3) incentives or adjustments that are--
>
> (A) designed to encourage service to targeted groups or special populations; and
>
> (b) for each student, consistent with the student's individualized education program developed under section 614(a)(5) of the Education of the Education of the Handicapped Act, where appropriate; and
>
> (4) procedures for using existing resources and methods developed in other programs receiving Federal assistance. (p.770-771)

Although the Carl D. Perkins Vocational and Applied Technology Education Act Amendments of 1990 presented a specific requirement for a system of performance measures and standards, this was not its first appearance on the national policy scene. The Job Training Partnership Act (JTPA) had previously required a system of performance measures and standards.

The JTPA Experience With Accountability and Evaluation

Performance standards were first adopted as an instrument of national human resource policy in the employment and training area with the passage of the Job Training Partnership Act of 1982 (P.L. 97-300). The measures that were developed for these programs included: placement and retention in unsubsidized employment, earnings, and reductions in public assistance. Performance standards had made a major impact on how these programs were conducted. Butler (1988) stated: "The most significant outcome-oriented practice has been the development of formal national, state, and locally-administered systems of outcomes measures, and standards for aggregated program achievement" (p. 2).

For the federal government, priorities in implementing JTPA 1982 were to hold local providers responsible for the outcomes that were attained, to encourage efficient service, to create incentives for effective management of local programs, and to foster acceptance of the program by business and industry (Dickinson & West, 1988). Though the record for JTPA was positive--especially compared to the Comprehensive Employment and Training Act (CETA), the federal training program that preceded JTPA--some concerns were raised. Among the concerns reported were: (a) inappropriate targeting of participants and services (Apling, 1989; Dickinson & West, 1988), (b) questionable performance measures (Frazier, 1991), (c) problems in defining services, outcomes, etc. (Frazier), and (d) inconsistent and incomplete data (Office of Technology Assessment, 1989).

Some problems were reported when agencies received incentives and adjustments for serving special populations. Apling (1989) reported that in JTPA programs, where adjustments were in use, data were difficult to obtain and verify concerning the special conditions that warranted adjustments. When asked to justify funding for programs on the basis of performance standards, JTPA representatives at times found it difficult to produce hard data to support their claims. Further, there were questions about the programs becoming so outcomes driven that the mission of the program became secondary to producing adequate "numbers." (Butler, 1988).

The JTPA experience with the use of performance measures and standards provided a basis for their use in other programs. As Butler (1988) stated, "I will argue that the performance standard approach has much in its favor...with appropriate modifications for difference of purpose, it ought to be emulated in large part by revised vocational education legislation (p. 3). The Office of Technology Assessment (OTA) was asked to examine the feasibility of using performance measures and standards in the assessment of vocational programs. OTA (1989) reported that "the application of outcome-based performance standards in...the Job Training Partnership Act, has led many observers to call for a similar strategy in vocational education" (p. 2).

Using Performance Measures And Standards

One of the probable impacts of the 1990 Amendments will be the increased attention paid to student outcomes. Adoption of performance measures and standards will allow education agencies to assess student outcomes for program evaluation purposes. The measures and standards must be carefully constructed, however, so as not to hinder the process they seek to evaluate. As defined by the Department of Education (Federal Register, August 14, 1992) a measure is a description of an outcome, and a standard is the level or rate of that outcome. Hoachlander, Levesque, and Rahn (1992) explained that, "an outcome indicates the condition that will be measured, while a measure specifies how that condition will be measured, and a standard represents the level against which performance on the measure will be evaluated" (p. 45).

States must make choices such as whether to emphasize the development of academic measures centered on benchmarking (meeting an outside accepted standard) or on value added. As Ewell (1988) stated:

> From a policy perspective, however, the issue can be real and concrete: Are institutions and programs to be judged primarily in terms of the degree to which they `develop talent' or in terms of the degree to which their ultimate products meet accepted standards? (p. 64)

When used within the context of a broader and more comprehensive system of evaluation, the use of performance measures can be helpful. As suggested by McCaslin (1990), and White (1990), program evaluation will be more meaningful if needs and processes are evaluated in addition to outcomes.

The use of measures and standards in vocational education could serve several purposes. Section 117 of the Carl D. Perkins Vocational and Applied Technology Act of 1990 outlines their use in for annual local program review. When dealing with occupational training, there is an expectation in the workplace that measures and standards can be used as benchmarks for performance. Measures and standards for vocational programs can also serve to provide the framework for assessing student progress against an accepted level of performance, and for identifying programs where outcomes are not meeting prescribed levels, suggesting inadequacies in the program. Data on student outcomes could also be used for comparing programs and institutions.

Problem Statement

The move to establish a system of performance measures and standards in vocational education is a large undertaking. The states had until September 25, 1992 to implement the systems of standards and measures (Federal Register, August 14, 1992). Many of the states found it necessary to develop new evaluation procedures as a result of the mandates of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. Yet, relatively little information is available regarding this process. Hoachlander and Rahn (1992) gathered information in 1991 from the states in an effort to determine the *expected* makeup of the systems. However, Hoachlander and Rahn stated, "The systems actually implemented in fall 1992 may look substantially different, as states continue to develop performance measures and standards" (p. 2). By December 1, 1992, no information was available concerning the actual systems of core standards and performance measures that had been adopted by each state. This information could then be used to further develop and improve their system of performance measures and standards and in meeting the requirements of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990.

Purpose and Objectives

The purpose of this study was to examine the system of performance measures that had been approved in each state in response to the requirements of Section 115 of the Carl D. Perkins Vocational and Applied Technology Act of 1990. The specific objectives were:

1. To ascertain what types of measures had been approved for academic performance (i.e. basic and advanced) and other types of performance (i.e. competency attainment, work skill attainment, retention/completion, placement, and service to special populations) in secondary programs in each state.
2. To ascertain what types of measures had been approved for academic performance (i.e. basic and advanced) and other types of performance (i.e. competency attainment, work skill attainment, retention/completion, placement, and service to special populations) in postsecondary programs in each state.

Methodology

Descriptive-survey research methods were used in this study. The 54 state directors of vocational education were asked to submit documents which were reviewed and analyzed. For the purposes of this study, a state was defined as any of the 50 states in the United States plus the District of Columbia, Puerto Rico, Guam, and the Virgin Islands.

An initial letter was sent to all 54 state directors on November 24, 1992 requesting documents which describe the system of performance measures and standards that had been approved by their state board for vocational education. This strategy was used to minimize the amount of time and energy that would be required to provide the information. Approximately four weeks later, a followup letter, containing the original request, was again sent to the 19 state directors who had not responded. A third and final follow-up letter was sent on February 1, 1993 to the remaining 7 state directors who had not responded. On March 3, 1993 phone calls were made to the remaining 5 state directors from which no response had been received. As of April 15, 1992, 52 of the 54 states (96%) had responded with information concerning their approved systems of measures for secondary vocational education programs and 50 (93%) had responded with information concerning their approved systems of measures for postsecondary programs. Two state directors (Iowa and the Virgin Islands) indicated that their system of measures and standards had not been approved by their state boards. Additionally, Georgia and Arkansas did not report their system of postsecondary performance measures and standards.

Once the documents had been received, they were reviewed in order to determine the performance measures that had been approved. For the purposes of this study, only performance measures outlined in section 115 of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 were considered. This analysis resulted in a listing, by states, of the measures that the states had adopted, using the categories listed in section 115 of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. The following categories were established: (a) basic academic skills, (b) advanced academic skills, (c) competency attainment, (d) workskill attainment, (e) retention/completion, (f) placement, and (g) service to special populations.

A summary sheet was developed for each state, categorizing the data on adopted measures. On March 12, 1993, the summary sheets were mailed to the state directors of vocational education. Personnel from each state were asked to review, verify and amend the listing as necessary. When discrepancies occurred, a further review of the documents was carried out. If necessary, a followup call was made to the state director's office for additional clarification.

Findings

This section reports the measures that states have approved for their statewide system of core standards and measures of performance. First, the measures approved for secondary vocational education will be presented. These will be followed by the measures approved for postsecondary vocational education.

Approved Measures for Secondary Vocational Education

The majority of the measures reported by the states have been approved for implementation in 1993. However, several measures were reported that were approved for implementation in 1994 or later. As indicated previously, Iowa and the Virgin Islands had not yet approved standards for their system. Therefore, information from these areas was not included in this report. The number of performance measures approved for secondary vocational education ranged from two to 16 and averaged 10.

Academic Skills

The information presented in Table 1 identifies the areas for which states have approved measures of learning and competency gains in academic skills. These academic skills include two types: basic and advanced. For purposes of this paper the academic skills were classified as either reading, language, mathematics, science or "other". Thirty states were using the same set of measures for both basic and advanced academic skills.

Table 1

Frequency and Percentage of States Utilizing Each Measure of Academic Performance (N=54)

Measure	Secondary		Postsecondary	
	f	%	f	%
Basic Academics				
Reading	43	80	26	48
Language	40	74	29	54
Mathematics	46	85	30	56
Science	19	35	8	15
Other	24	44	27	50
Advanced Academics				
Reading	35	65	16	30
Language	35	65	24	44
Mathematics	41	76	26	48
Science	22	41	8	15
Other	23	43	24	44

The remaining 22 states were using different sets of measures for basic and advanced academic skills. At the secondary vocational education level, two of the reporting states did not indicate that they had approved any basic or advanced academic skill measures.

Basic academic skills. The area that states had most often approved as a measure of basic academic skills (see Table 1) was mathematics (85%). This was followed by reading (80%), language (74%) and science (35%). A total of 44% of the states indicated that they had approved an "other" measure of basic academic skills for their system of standards and measures of performance. Examples of "other" basic academic skills included measures in areas such as social studies, critical thinking, and problem solving.

Advanced academic skills. The areas in advanced academic skills (see Table 1) that were reported approved by each state followed a pattern similar to that reported for basic academic skills. More than three-fourths of the states reported a mathematics measure for advanced academic skills (76%). About two-thirds (65%) of the states reported using reading and language measures. Less than half (41%) of the states reported using measures in the area of science. In the area of "other" advanced academic skills, 43% of the states had approved measures such as critical thinking, problem solving, and social studies. Six of the states reporting did not include any approved measures of advanced academic skills.

Other Measures of Performance

Table 2 presents information on other measures of performance that have been approved by the states. Only two states had not yet approved any measures of performance for secondary vocational education programs. These areas are discussed below and include: competency attainment, work skill attainment, program completion, high school graduation, placement, percent served, and gender mix.

Competency attainment. Competency attainment was generally defined by the states as basic employability skills. Approximately one-half of the states (44%) reported using competency attainment performance measures.

Work skill attainment. This area tended to be defined by the states as including measures of specific occupational skills attainment. About three-fourths of the states (72%) reported that their states had approved performance measures on work skill attainment.

Program completion. States generally referred to program completion as the rate at which students fulfilled the requirements of their program. Almost one-half (46%) of the states reported having this type of performance measure approved.

High school graduation. High school graduation referred to the rate of students who had successfully completed the requirements for graduation in their school or its equivalent (e.g., General Equivalency Diploma). One-half (50%) of the states reported using this as a performance measure.

Table 2

Frequency and Percentage of States Utilizing Other Measures of Performance (N=54)

Measure	Secondary		Postsecondary	
	f	%	f	%
Competency Attainment	24	44	18	33
Workskill Attainment	39	72	34	63
Program Completion	25	46	38	70
High School Graduation	27	50	--	--
Related Placement	25	46	26	48
Any Placement	33	61	30	56
Percent Served	28	52	30	56
Gender Mix	17	31	17	31

Placement. Related placement refers to individuals who have obtained employment in an area closely related to their area of education and training. Any placement refers to obtaining any type of job after completing a program of studies. Approximately one-half (46%) of the states reporting using related placement as a performance measure, whereas 61% of the states reported using any placement as a performance measure. Nine states reported using both types of placement as performance measures. A total of 92% of the states reported using some type of placement measure.

Percent served. This performance measure referred to the percent of the high school aged special population students that were enrolled in vocational education programs. Slightly more than one-half (52%) of the states reported using this type of performance measure.

Gender mix. Gender mix referred to the percentage of male and female students who were enrolled in vocational education programs. Approximately one-third (31%) of the states indicated that this type of measure was being used in their system.

Approved Measures for Postsecondary Vocational Education

Again, most of the measures reported by the states were approved for use in 1993. However, some of the measures were approved for use after 1993. Iowa and the Virgin Islands reported that they had not yet approved standards for postsecondary vocational education programs. Information concerning postsecondary measures for Georgia and Arkansas was unavailable. Therefore, information from these areas was not included in this report. The number of performance measures approved for postsecondary vocational education ranged from two to sixteen and averaged eight. A total of four states did not report having any basic or applied academic skill measures approved for their postsecondary programs.

Academic Skills

The information presented in Table 1 identifies the areas for which states have approved measures of learning and competency gains in academic skills for postsecondary vocational education programs. These academic skills include two types: basic and advanced. For purposes of this report the academic skills were classified as either reading, language, mathematics, science or "other". Nineteen states were using the same set of measures for both basic and advanced academic skills. The remaining 35 states were using different sets of measures for basic and advanced academic skills.

Basic academic skills. The area that states most often had approved as a measure of basic academic skills (see Table 1) was math (56%). This was followed by language (54%), and reading (48%). Science was reported being used as measures by 15%. A total of 50% of the states indicated that they had approved an "other" measure of basic academic skills for their system of standards and measures of performance. Examples of "other" basic academic skills for postsecondary vocational education included the following: course completion, social studies, and thinking skills.

Advanced academic skills. Table 1 also reports the areas in advanced academic skills that were reported approved for postsecondary vocational education in each state. In the advanced academic skills area, 48% of the states reported they were using performance measures related to mathematics and 44% reported using measures related to language. Approximately one-third (30%) of the states were using measures in the reading area. Only eight states (15%) were using performance measures related to science. A total of 44% of the states reported using performance measures related to other advanced academic skill areas. This "other" category included measures such as: problem solving, higher order thinking, and interpersonal relations.

Other Measures of Performance

The information in Table 2 presents information on other measures of performance that had been approved by the states for their postsecondary vocational education programs. The other measures of performance were similar to those presented for secondary vocational education and included: competency attainment, work skill attainment, program completion, placement, percent served, and gender mix. These performance measures are discussed below.

Competency attainment. States tended to define competency attainment as the development of employability skills. Only one-third (33%) of the states reported that they had approved competency attainment performance measures for postsecondary vocational education programs.

Work skill attainment. This area was generally defined by the states as including measures of the extent to which students had developed specific occupational skills. Approximately two-thirds of the states (63%) reported that they had approved this type of a performance measure.

Program completion. States tended to refer to program completion as a measure of the ratio of students who initially enrolled to those who met the requirements/outcomes of the program. Nearly three-fourths (70%) of the states reported having approved this type of performance measure.

Placement. Two types of placement rates were reported by the states: related placement and any placement. Related placement referred to individuals who had obtained employment in an area closely related to their area of education and training. Any placement referred to obtaining any type of job after completing a program of studies. Approximately one-half (48%) of the states reporting using related placement as a performance measure. Fifty six percent of the states reported using any placement as a performance measure. Ten states reported using both types of placement as performance measures. A total of 88% of the states reported using either related or any type of placement as an approved performance measure.

Percent served. This performance measure referred to the percent of the special population students that were enrolled in postsecondary vocational education programs. Slightly more than one-half (56%) of the states reported that they were using this type of performance measure.

Gender mix. Gender mix referred to the percentage of male and female students who were enrolled in these postsecondary vocational education programs. Slightly less than one-third (31%) of the states indicated that their system was using this type of measure.

Comparison of Expected and Approved Measures

The findings reveal the actual makeup of the approved measures. A comparision of these findings with those of the Hoachlander and Rahn (1992) study of expected measures is contained in this section. Table 3 summarizes information on expected and approved measures. Several differences in methodology in the two studies are noted. The Hoachlander and Rahn (1992) study utilized a survey in an effort to determine the probable makeup of the state systems of measures and standards.

Table 3

Expected and Approved Measures

Secondary	Expected	Approved
Math	94	85
Reading	92	80
Science	79	35
High School graduation	82	50
Completion	82	46
Work Skill Attainment	84	72
Related Placement	94	46
Any Placement	80	61
Postsecondary	**Expected**	**Approved**
Math	70	56
Reading	68	48
Science	49	15
Completion	91	70
Work Skill Attainment	84	63
Related Placement	96	48
Any Placement	83	56

In response to whether a particular measure would be included in the approved system, a state could respond yes, no, or maybe. For the purposes of this comparison, the yes and maybe results were combined as the expected percentage of states utilizing a particular measure. This study examined actual documentation to determine if the states had approved a particular measure.

For expected measures dealing with academic skills, 94% of the states responded that they would or might use mathematics, while 85% approved a measure of mathematics achievement. Ninety two percent of the states reported that they would or might use reading, while 80% approved measures of reading achievement. Seventy nine percent of the states reported that they expected to or might use a measure of science achievement, while 35% actually approved measures related to science achievement.

Eighty two percent of the state reported that they would or might adopt high school graduation as a measure, while 50% actually approved such a measure. Sixty eight percent of the states reported that they would or might adopt a measure of program completion (described by Hoachlander and Rahn as Degree or Certificate), while 46% actually approved this measure. Work skill attainment (described by Hoachlander and Rahn as Occupational Competency) was reported by 84% of the states as a measure they would or might adopt. Seventy two percent of the states approved measures of work skill attainment. Ninety four percent of the states reported that they would or might approve a related placement as a measure, while 46% actually approved such a measure. Eighty percent of the states reported that they would or might approve any placement as a measure, while 61% approved any placement as a measure.

Conclusions

Based on the findings presented in the previous section, a number of conclusions have been developed. These conclusions are presented in this section.

In nearly every state, systems of core standards and measures of performance for secondary and postsecondary education had been approved and implemented in accordance with the requirements of Section 115 of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990. Only two states had not yet had their system approved and were unable to provide the researchers with their approved measures for secondary vocational education. At the postsecondary level, information was not available from four states.

State systems tended to have more measures approved for secondary vocational education than for postsecondary vocational education programs. The average number of performance standards that had been approved for secondary vocational education programs was 10. An average of eight performance measures had been approved for postsecondary vocational education programs.

The performance measures listed in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 were generally accepted by the states. Of the measures of performance included in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, only competency attainment had been approved by less than 50% of the states.

States have taken seriously the requirement that measures of learning and competency gain, including student progress in the achievement of basic and more advanced academic skills be included in their systems. Academic skill measures were approved more often for secondary vocational education programs than they were for postsecondary vocational education programs. Mathematics and reading were the most frequently approved basic and advanced academic skill measure for secondary vocational education programs, followed by language measures. Science measures were approved least often as secondary vocational education academic skill measures. For postsecondary vocational education, mathematics and language were the most frequently approved basic and advanced academic measures followed by reading measures. Science measures were also approved least often at the postsecondary education level.

In addition, states have responded positively to the requirement that one or more measures of other performance be included in their system of core standards and measures of performance. At the secondary vocational education level, work skill attainment measures were reported as being approved most often. The next most frequently approved measures dealt with placement of any type, followed by program completion, and high school graduation. For postsecondary vocational education, program completion measures were approved most often. The second and third most often approved measures were work skill attainment and placement of any type, respectively.

About one-half of the states reported measures for both secondary and postsecondary vocational education which addressed the extent to which they were serving special populations. In some cases, it was not obvious as to whether or not special population measures could be obtained from the state's records.

Specific measures related to the gender mix of individuals served by vocational education were not widely used by the states. Approximately one-third of the states had approved measures of gender mix for both secondary and postsecondary vocational education programs.

Attempts to compare performance standards and measures across the nation, as suggested by Office of Technology Assessment (1989), will prove challenging due to the diverse nature of the approved measures and standards currently approved by the states. Differences in types and number of approved measures are not only apparent from state to state, but also between secondary and postsecondary programs.

Recommendations

The requirement that states develop a system of standards and measures of performance for secondary and postsecondary programs is new in vocational education legislation. This initial experience should be monitored in order to see how future policy initiatives related to these measures and standards might be improved. The following specific recommendations are offered:

1. This study relied on analyzing existing documentation, however, further information should be collected regarding the rationale states used in selecting their measures.
2. The strengths and weaknesses of the various measures of performance should be assessed in order to determine their relevancy for future use. Additionally, the validity and reliability of these measures should be established.
3. States should critically review their approved system of standards and measures of performance in order to identify the major facilitators and barriers they have encountered in developing and implementing them. Information also should be collected regarding how states offered incentives and made adjustments to

encourage service to targeted populations.

4. Efforts should be made to determine how the state approved measures and standards compare with business and industry standards.
5. Further research on the standards should be conducted to identify the type and level of standards employed by the states.

Summary

Vocational education has been concerned with evaluation for many years. At the national level, vocational education legislation has included emphasis on evaluation since the passage of the Vocational Education Act of 1963. The inclusion of requirements for a state system of performance measures and standards in the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 continued this emphasis. This study examined those systems in early 1993. These performance measures and standards should continue to be monitored as they are further refined and developed. This information is needed to provide information for improving how vocational education programs are evaluated and guiding future policy initiatives, such as the reauthorization of future vocational education legislation.

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THE EFFECTS OF COOPERATIVE LEARNING METHODS ON ACHIEVEMENT, RETENTION, AND ATTITUDES OF HOME ECONOMICS STUDENTS IN NORTH CAROLINA

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Introduction, Significance, and Statement of the Problem

Teachers have the option of structuring lessons competitively, individualistically, or cooperatively. The decisions teachers make in structuring lessons can influence students' interactions with others, knowledge, and attitudes (Carson, 1991; Johnson & Johnson, 1987). In a cooperative learning classroom students work together to attain group goals that cannot be obtained by working alone or competitively. In this classroom structure, students discuss subject matter, help each other learn, and provide encouragement for member of the group (Johnson, Johnson, & Holubec, 1986).

Cooperative learning, as an instructional methodology provides opportunities for students to develop skills in group interactions and in working with others that are needed in today's world (Carol, 1988; Imel, 1989; Kerka, 1990). According to Johnson and Johnson (1989), cooperative learning experiences promote more positive attitudes toward the instructional experience than competitive or individualistic methodologies. In addition, cooperative learning should result in positive effects on student achievement and retention of information (Dishon & O'Leary, 1984; Johnson & Johnson, 1990; Slavin, 1991). According to McKeachie (1986), students are more likely to acquire critical thinking skills and metacognitive learning strategies, such as learning how to learn, in small group cooperative settings as opposed to listening to lectures.

While cooperative learning as an instructional methodology is an option for teachers, it is currently the least frequently used (Johnson & Johnson, 1991). More than 85% of the instruction in schools consists of lectures, seatwork, or competition in which students are isolated from one another and forbidden to interact (Johnson, Johnson, Holubec, & Roy, 1984). Goodlad (1984) reported that most classroom time is spent in "teacher talk", with only 1% of the students' classroom time used for reasoning about or expressing an opinion.

Group work has been used extensively in home economics to provide practice in acquiring both competence and skills in interpersonal relations. The introduction of cooperative learning strategies in home economics has potential for improving the group activities commonly used in these classes (Hall & Paolucci, 1972). While empirical evidence supports the use of cooperative learning with a variety of subject areas and age groups, the extent to which these methods are beneficial in home economics education is unknown. Without empirical evidence to support the effectiveness of cooperative education in home economics, it is likely to be ignored as an instructional methodology by home economics educators.

The purpose of this study was to determine the effects of the cooperative learning approach of Student Teams-Achievement Divisions (STAD) on the achievement, retention of information, and attitudes toward the instructional method of selected home economics students. The following research questions provided the specific focus for the study:

1. Was there a difference in achievement, as measured by the researcher developed achievement test for students who have been taught by the cooperative learning method, STAD, and those who were taught by traditional methods?

2. Was there a difference in retention of information, as measured by the researcher developed retention test administered three weeks after the end of instruction for students who have been taught by the cooperative learning method, STAD, and those who were taught by traditional methods?

3. Was there a difference in the attitudes toward the teaching method used for students who have been taught by the cooperative learning method, STAD, and those who were taught by traditional methods?

Theoretical/Conceptual Base and Related Literature

According to Slavin (1987), there are two major theoretical perspectives related to cooperative learning--motivational and cognitive. The motivational theories of cooperative learning emphasize the students' incentives to do academic work, while the cognitive theories emphasize the effects of working together.

Motivational theories related to cooperative learning focus on reward and goal structures. One of the elements of cooperative learning is positive interdependence, where students perceive that their success or failure lies within their working together as a group (Johnson, Johnson, & Holubec, 1986). From a motivational perspective, "cooperative goal structure creates a situation in which the only way group members can attain their personal goals is if the group is successful" (Slavin, 1990, p. 14). Therefore, in order to attain their personal goals, students are likely to encourage members within the group to do whatever helps the group to succeed and to help one another with a group task.

There are two cognitive theories that are directly applied to cooperative learning, the developmental and the elaboration theories (Slavin, 1987). The developmental theories assume that interaction among students around appropriate tasks increases their mastery of critical concepts (Damon, 1984). When students interact with other students, they have to explain and discuss each other's perspectives, which leads to greater understanding of the material to be learned. The struggle to resolve potential conflicts during collaborative activity results in the development of higher levels of understanding (Slavin, 1990). The elaboration theory suggests that one of the most effective means of learning is to explain the material to someone else. Cooperative learning activities enhance elaborative thinking and more frequent giving and receiving of explanations, which has the potential to increase depth of understanding, the quality of reasoning, and the accuracy of long term retention (Johnson, Johnson, & Holubec, 1986). Therefore, the use of cooperative learning methods should lead to improved student learning and retention from both the developmental and cognitive theoretical bases.

Several studies have examined the effects of cooperative learning methods on student learning. Humphreys, Johnson, and Johnson (1982) compared cooperative, competitive, and individualistic strategies in science classes and found that students who were taught by cooperative methods learned and retained significantly more information than students taught by the other two methods. Sherman and Thomas (1986) found similar results in a study involving high school general mathematics classes taught by cooperative and individualistic methods. Allen and Van Sickle (1984) used STAD as the experimental treatment in a study involving low achieving students. They found that the cooperative learning group scored significantly higher on a world geography test. Perrault (1982/1983) found that cooperative learning resulted in significantly higher achievement in industrial arts students at the knowledge and comprehension levels of Bloom's taxonomy, but not at the application level when compared to students taught by competitive methods. In a study in which nutrition was taught to both elementary and secondary students using a cooperative learning strategy, Wodarski, Adelson, Todd, and Wodarski (1980) found significant gains between the pretest and posttest scores. The researchers concluded that cooperative learning was an effective method of teaching nutrition. In a review of 46 studies related to cooperative learning, Slavin (1983) found that cooperative learning resulted in significant positive effects in 63% of the studies, and only two studies reported higher achievement for the comparison group. Johnson, Maruyama, Johnson, Nelson, and Skon (1981) conducted a meta-analysis of 122 studies related to cooperative learning and concluded that there was strong evidence for the superiority of cooperative learning in promoting achievement over competitive and individualistic strategies.

Johnson and Ahlgren (1976) examined the relationships between students' attitudes toward cooperation, competition, and their attitudes toward education. The results of the study indicated that student cooperativeness, and not competitiveness, was positively related to being motivated to learn. Humphreys, Johnson, and Johnson (1982) also found that students studying physical science in a cooperative learning treatment group rated their learning experience more positively than did students in competitive and individualistic treatment groups. Tjosvold, Marine, and Johnson (1977) found that cooperative learning strategies promoted positive attitudes toward both didactic and inquiry methods of teaching science, and students taught by cooperative strategies believed they had learned more from the lesson than did students taught by competitive strategies. In a study involving elementary and secondary students who were taught nutrition, Wodarski, et al., (1980) found that 95% of the elementary students enjoyed the cooperative learning activities and that they had learned a lot about nutrition.

Research Methods and Procedures

The population for this study consisted of home economics students enrolled in a Food and Nutrition course in high schools in the central region of North Carolina. Four schools that offered two or more sections of the food and nutrition course agreed to participate in the study. The design of study was quasi-experimental with 91 students in the cooperative learning (STAD) group and 106 students in the non-cooperative learning group. According to Hays (1973), samples of this size would allow the researchers to detect differences between the treatment groups larger than 0.50 standard deviations at an alpha level of .05 and a desired power of .90. Once classes from each participating school were identified, they were randomly assigned to cooperative and noncooperative treatment groups.

In order to account for possible preexisting differences in overall ability between the treatment groups, California Achievement Test scores and first semester grades in home economics were used as covariate measures. In order to control for the "teacher quality" variable, both groups were taught by the regular home economics teachers who were provided inservice in the use of STAD by an expert on cooperative learning. Teachers were also provided detailed instructions for conducting learning activities in both the cooperative and noncooperative groups. Both groups were taught the nutrition unit using the same content outline, but students in the cooperative learning group completed learning activities in small heterogeneous groups, while the students in the non-cooperative group completed activities individually. The unit was taught to both groups over a two week period.

An instrument to measure student achievement and retention was developed from items related to the unit of instruction in the state-adopted competency test-item bank. Content validity of the items was assessed at the time they were developed for the test-item bank, and was verified by home economics teachers, a home economics teacher educator, and a state consultant for home economics. Items related to each instructional objective were selected for the instrument. The instrument was pilot tested to establish reliability in a school not selected to participate in the study. The Kuder-Richardson coefficient of internal consistency for the instrument was .87. The test was administered to both groups at the end of the instructional unit. Three weeks later, the test was administered again to the students to determine retention of information.

The instrument used to measure attitudes toward the method of instruction was adapted from an instrument used in a similar study by Flowers (1986/1987). The instrument had a coefficient of internal consistency (Cronbach's Alpha) of .89. The attitude instrument was administered at the end of the unit of instruction.

Findings and Conclusions

Preliminary analyses of covariate measures (California Achievement Test scores and average grade in home economics) showed that students in the treatment groups were not significantly different (see Table 1). Moderate relationships, with correlation coefficients ranging from .29 to .54, were found between the covariate measures and the dependent variables of achievement and retention. These relationships supported the use of the covariate measures used in this study.

Table 1

Comparison of CAT Scores and Home Economics Grade by Teaching Method

Method	CAT		Average grade	
	M	*SD*	*M*	*SD*
Cooperative	741.33	30.21	79.92	9.58
Noncooperative	741.55	29.36	82.30	10.23
	$t = 0.05$, $p = .96$		$t = 1.67$, $p = .10$	

Student achievement was measured by the number of correct responses on the 33-item achievement test developed by the researchers. The mean scores for the treatment groups were adjusted by the covariate measures to statistically control for preexisting differences. The adjusted mean score for the cooperative learning group was 19.61, while the adjusted mean score for the noncooperative treatment group was 19.52 (see Table 2). The test of retention was administered three weeks following the achievement test. The adjusted mean score for the cooperative learning group on the retention test and the noncooperative group were very similar.

Multivariate analysis of covariance was used to analyze the data related to the dependent variables of student achievement and retention of information. MANCOVA showed no significant difference among the dependent variable between the teaching methods used [Hotelling's T = .00015, F(2, 18) = 0.14, p = .99]. Since the multivariate analysis showed no difference between the treatment groups, no further analyses were performed related to student achievement or retention.

Table 2

Mean Student Achievement and Retention Scores by Teaching Method

	Achievement Test		Retention Test	
Method	Observed mean	Adjusted mean	Observed mean	Adjusted mean
Cooperative	19.38	19.61	18.27	18.49
Noncooperative	19.75	19.52	18.63	18.41

Student attitude toward the teaching method was not included in the multivariate analysis because it was not assumed to be correlated with the other dependent variables. Pearson product moment correlation coefficients of .06 and .10 confirmed that student attitudes were not related to achievement or retention, respectively. The mean attitude score for students in the cooperative learning group was 81.45 (*sd* = 15.96), while the mean score for students in the noncooperative group was 77.00 (*sd* = 15.21). A t-test showed no significant difference in attitudes toward the teaching method between the groups (*t* = 1.84, *df* = 164, *p* = .07).

Based upon the findings of this study, the following conclusions were drawn:

1. The cooperative learning approach is no more or less effective than the noncooperative learning approach with regard to home economics student achievement or student retention of information.

2. The cooperative learning approach is no more or less effective than the noncooperative learning approach with regard to home economics students' attitudes toward the method of instruction.

Implications and Recommendations

While cooperative learning was not found to be more effective than noncooperative learning with respect to home economics students' achievement and retention in this study, the literature suggests there may be additional reasons to use cooperative learning. Certainly, the ability to work with others within a group and to develop interpersonal skills may be justification for using cooperative learning strategies. This study has shown that cooperative learning methods were as effective as traditional methods with regard to achievement and retention, so concerns about the effectiveness of cooperative learning methods in these areas have been addressed. Students taught by cooperative methods should perform equally as well as students taught by noncooperative methods. In addition, student attitudes toward cooperative learning are similar to noncooperative learning.

Additional research should be conducted to increase the generalizability of the findings to home economics education. Studies in which cooperative learning strategies are used for a semester or an entire year should be conducted to determine if student achievement is increased with additional experience in using cooperative learning. Future research should also focus on comparisons between different models of cooperative learning, as well as comparisons with noncooperative learning approaches in order to determine if other cooperative learning models are equally effective in producing desired student outcomes.

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IS TECH PREP REALLY REFORM?

A NATIONAL STUDY OF TECH PREP IMPLEMENTATION

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Running Head: IS TECH PREP REFORM?

Many states and local consortia are espousing tech prep as a basis for educational reform. Typical of these claims is the following statement: "Tech Prep represents a bold school reform initiative. Designed to equip students with the skills and competencies to meet employer's expectations for the jobs of the twenty-first century, Tech Prep ... prepare[s] students for the workforce of the future" (Illinois State Board of Education, 1993, p. 1). Implicit in this statement is the intent to facilitate a more career-oriented approach to schooling, but is that *really* educational reform? To serve as the basis for stimulating a dialogue about the relationship between tech prep and reform, we explore the thesis of an article in *Educational Researcher* by Newmann (1993) titled "Beyond common sense in educational restructuring: The issues of content and linkage". In this article, Newmann postulates that "common sense" has permeated much of the effort to restructure education. He contends that a more complete theory of educational reform is needed; a theory that emerges from four themes: a) Depth of understanding and authentic learning, b) Success for all students, c) New roles for teachers, and d) Schools as caring communities. However, at present, these themes are not well understood and little is known about their relationship to existing educational policy and practice, such as that associated with tech prep.

The Meaning of Educational Reform

Over a decade ago, the National Commission on Excellence in Education sounded an alarm to the public about American education when it published *A Nation at Risk* (1983). With this action, the nation's most recent era of educational reform was launched. Since the early 1980s, many approaches to reform have swept the nation leading to the current emphasis on educational restructuring, or what some refer to as systemic reform. Considering the vast array of reforms of the past decade, it is remarkable that at least some approaches involving vocational education did not receive greater attention. Instead, vocational education was seen as a part of the problem rather than a part of the solution, and reform of academic education, primarily for the college-bound, dominated the nation's reform agenda (Wang, Haertel, & Walberg, 1993).

Although vocational education was not central to reform strategies, just about every other idea was. Newmann (1993) argued that educational reform (also known as restructuring) lacks any single commonly accepted definition. However, he identified several *strategies* that have been employed, including time on task, participatory decision making, school-level accountability, state and/or national teacher certification, parental involvement, and demonstration of mastery by students. Some of these strategies are supported by empirical evidence. Others are not, due partly to the sheer number of changes being proposed.

To begin to remedy this dilemma, Newmann suggests that new organizational structures within schools must nurture teacher commitment and competence to create the “powerful content” (p. 6) needed for systemic reform. “Content” in Newmann's words "involves more than curriculum topics; it includes a broad range of values, beliefs, and competencies expressed by teachers, administrators, and other staff. In short, content is the substance that both guides the use of and is involved by organizational form" (p. 6). Within this organizational structure, Newmann assumes the "commitment (motivation) from adults to teach and students to learn", and "competence (technical capacity) of adults to offer a better learning environment" (p. 5) for students as the basis for implementing systemic reform.

Newmann calls for a theory of educational reform to address questions pertinent to the linkages and coordination needed between multiple organizations and the factors that affect schooling to produce desired teacher commitments and competencies to bring about systemic change. Of the many *themes* in the literature, Newmann contends four consistently appear, including those supported by such well known reformers as Comer, Goodlad, Sizer, and Slavin. Newmann believes the following four themes have the greatest potential to focus educational reform and stimulate innovation:

> Theme 1: Depth of understanding and authentic learning calls for teacher commitment to a vision that engenders depth of understanding and authentic learning as opposed to traditional, didactic approaches of "transmission and reproduction of declarative knowledge" (p. 6). As a result, a more active, relevant, and student-centered approach to teaching and learning is created. Local empowerment of teachers, site-based management, and teaming are all seen as strategies consistent with this theme.
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> Theme 2: Success for all students emphasizes the importance of education "not only for the small proportion of the population that has traditionally succeeded in schools" (p. 7), but for all students. He points out the gap between the majority of teachers' White, middle-class values and the values held by a growing student population of poor, physically and emotionally uncared for, limited English proficient, and disenfranchised youths. He

argues that "some of the problems of students at risk will be solved ultimately only through massive efforts to build social capital" (p. 7). Strategies that empower teacher *and students* are needed to build more opportunities for student success.

Theme 3: New roles for teachers specifies the wide variety of roles and responsibilities that teachers play in reformed school environments. Included among these roles is the following: "instructional coach, instructional or curriculum team member, facilitator of new programs, student advisor, and participant in organizational decision making" (p. 7). Newmann is realistic about the difficulties teachers face with little experience or formal training for these roles. He fears that these new roles will become "ends in themselves," having little relationship to a larger, collective vision of educational reform.

Theme 4: Schools as caring communities address the need to re-build the culture of schools. Newmann contends that

> Unfortunately, the dominant discourse of educational reform is technical, functional, and individualist ... It has led to designing schools as corporate, rational bureaucracies and conceiving their missions as analogous to shopping malls,... or private clubs where the main purpose of the organization is to serve individual, private needs and wants. (p. 7)

He argues that schools as caring communities overcome these issues by advocating human dignity and the public good. Examples include families of teachers and students who stay together for several years.

Newmann's conception of educational reform theory requires better alignment of reform *strategies* with reform *themes* embedded in teacher commitment and competency. This alignment may be achieved by ideas that are "the most powerful pillars of restructuring 'theory' to date" (p. 9). They are: a) high standards, b) high incentives/high stakes, c) local empowerment, and d) collaborative organization. Newmann acknowledges the vulnerabilities in these theoretical "pillars" in several respects. He asks how standards of teaching, student learning, and curriculum materials can be aligned; how external standards can mesh with local empowerment; how citizens, who often express satisfaction with their own local schools, can be enticed into supporting widespread reform; and, how social capital can be built to create a more equitable environment for educating students, within and outside of schools. Together, these pieces of the reform puzzle—strategies, themes, and the pillars of restructuring theory—form the basis of Newmann's emerging educational reform theory. How do the pieces of the reform puzzle compare to tech prep? Does the emerging theory fit? Are there ways in which tech prep differs, yet still exemplifies educational reform? Some background on the tech prep concept helps set the stage for addressing these critical questions.

The Meaning of Tech Prep

Over the past decade, when educational reform focused almost exclusively on the reform of academic education primarily for those destined for college, concern about the quality of education for the remaining group of youths was voiced. First, reports describing the "neglected majority" (Parnell, 1985) and the "forgotten half" (William T. Grant Foundation, 1988a & 1988b) identified the problem of inadequate educational preparation for the vast majority of the nation's high school students. Later, prominent groups such as the Commission on the

Skills of the American Workforce produced *America's Choice* (1990) and the Secretary's Commission on Achieving Necessary Skills, the SCANS commission, created a series of reports pointing to issues related to the poor educational preparation of youths and adults for the nation's increasingly demanding workplace.

In the 1990s, these concerns merged to create educational initiatives focused on linking more closely the worlds of school and work, especially for the non-college bound. In this light, tech prep and other emerging school-to-work initiatives are seen as educational reform approaches (Boesel, Rahn, & Deich, 1994; Dornsife, 1992; Hoerner, 1991; National Center for Research in Vocational Education (NCRVE), 1992; Nothdurft & Jobs for the Future, 1990). The most dramatic action taken to support tech prep as a vehicle to educational reform came when the federal government passed The Carl D. Perkins Vocational and Applied Technology Education Act of 1990, commonly known as Perkins II. With bipartisan support from the U.S. Congress, the Tech Prep Education Act [Public Law 101-392, Title IIIE] as a part of Perkins II came into effect in July of 1991.

Through the Tech Prep Act, policy and federal funding were authorized for implementation of local 2+2 tech prep programs. These programs were viewed as alternatives to traditional schooling seen as inadequate to prepare many of the nation's youths for either further education or work beyond high school, especially special population groups and students not traditionally bound for college. Issues surrounding school reform and workforce preparation were acknowledged as complex and interrelated, creating the need for legislation that needed to be flexible in its approach to linking school and work. Within this milieu, tech prep was seen as an innovative approach to improve schooling while, at the same time, preparing America's future workforce.

To obtain federal funds, tech prep must be carried out by local consortia consisting of secondary educational agencies and postsecondary institutions. This particular feature of the federal bill appears to facilitate the development of tech prep curriculum that cuts across academic and vocational lines as well as secondary and postsecondary boundaries. According to the law, a tech prep education program means

> a combined secondary and postsecondary education program which—
>
> (A) leads to an associate degree or 2-year certificate;
>
> (B) provides technical preparation in at least 1 field of engineering technology, applied science, mechanical, industrial, or practical art or trade, or agriculture, health, or business;
>
> (C) builds student competence in mathematics, science, and communication (including applied academics) through a sequential course of study; and
>
> (D) leads to placement in employment. (U.S. Congress, P.L. 101-392, 1990)

Based on this definition, all local tech prep consortia receiving federal funds are charged with addressing what are commonly referred to as the seven essential elements of tech prep. These essential elements are:

1. Formal, signed articulation agreements;
2. A core of required courses in mathematics, science, communications (including applied academics), and technologies in the two years of

secondary school preceding graduation and two years of higher education or at least a two-year apprenticeship following secondary instruction;

3. Tech prep curriculum development;
4. In-service training for teachers that focuses on implementation of curricula, provides joint training for all faculty in consortium-member institutions, and may provide training in special formats;
5. Training for counselors that focuses on student recruitment, completion, and job placement;
6. Equal access for special populations to the full range of Tech Prep programs, including the development of services appropriate to such populations; and
7. Preparatory services to help all populations participate in Tech Prep. (Brustein, 1993)

Interestingly, with only a few years of implementation underway and little evidence of effectiveness, the legislative authority for tech prep was extended with passage of the School-to-Work Opportunities (STWO) Act in 1994. A primary goal of the STWO Act is to establish a national framework to encourage states to plan and implement local school-to-work systems that assist youth to identify and obtain rewarding work after completing secondary or postsecondary education. Three components form the foundation of new school-to-work educational initiatives: a) the school-based learning component, b) the work-based learning component, and c) the school-to-work connecting component. Although still new, along with the Tech Prep Act, this bill is intended to increase momentum to move various school-to-work reform approaches, including tech prep, to the mainstream of the nation's educational reform agenda.

Problem Statement

Given the trend of newer, school-to-work oriented approaches to schooling entering the educational reform movement, the purpose of this paper is to consider their conceptual and strategic fit there. To make that assessment, we examine tech prep not simply within the context of reform of vocational education but of all of education. That is, we explore the claim that tech prep *is* educational reform. To address this claim, we pose several questions: To what extent are Newmann's strategies and themes exhibited within the national tech prep movement? Are different approaches to reform demonstrated with tech prep that could help to expand or re-focus Newmann's educational reform theory? What issues are evident in national tech prep implementation and how do these issues relate to concerns raised by Newmann regarding reform occurring generally? Answers to these questions are crucial to considering the future of tech prep. Without more serious attention to these types of questions, tech prep as an educational reform may remain more rhetoric than reality. However, where tech prep is consistent with or an extension of educational reform, there may be opportunity to broaden its audience and impact.

Methods

To examine the relationship between tech prep and educational reform, we carried out a secondary analysis of an existing national database on local tech prep implementation created during 1993 (Bragg et al., 1994). The original data set contains an extensive amount of information on how a nationally-representative sample of local tech prep consortia conducted planning and implementation activities. The respondents to the survey were local tech prep coordinators—typically individuals responsible for the day-to-day planning and implementation of tech prep. In total, data from 473 local coordinators were included in the data set, representing 55 percent of all local tech prep consortium coordinators in the nation as of June 1, 1993.[1]

Survey Administration

Results are based on a sixteen-page mail questionnaire that was organized into five parts: a) tech prep goals and outcomes, b) the stage of implementation of tech prep, c) barriers to tech prep implementation, d) tech prep consortium characteristics, and e) tech prep coordinator background. Throughout the questionnaire, respondents were directed to provide information for the 1992-1993 academic year, providing data on the second year of implementation of tech prep for approximately two-thirds of the respondents. The remaining one-third had been actively implementing tech prep for only one year or less when reporting on their activities for the 1992-93 academic year.

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[1] Two interrelated factors contributed to the final sampling design for this study. First, due to other federally-supported surveys involving local Tech Prep coordinators conducted by the U.S. Department of Education, the researchers were concerned about burdening local Tech Prep coordinators with another major mail questionnaire during 1993. Based on this fact, we settled on a sample rather than census approach. Second, this study followed two prior years of data collection conducted by the authors to examine Tech Prep implementation activities by the 50 states, particularly related to the relationships between state and local policy and practice. Since the knowledge base created by this previous research included information from all 50 states and the District of Columbia, it was crucial to the researchers' current and future work to involve all 50 states and DC. Taken together, these factors contributed to the development of a sampling procedure that differed from either a census or simple random sample. Consequently, the sampling design that was used (combined with the high response rate ultimately obtained) was thought to be adequate to consider findings from this study to be representative of the population of local Tech Prep consortia in the United States.

Data Quality and Analysis Procedures

To ensure the content validity of the instrument, a national panel of experts reviewed a draft of the mail questionnaire. Based on feedback from this panel, the questionnaire was revised and a pilot test was conducted. The Cronbach's alpha reliability coefficient was calculated for four subscales used in the survey. All of the subscales, level of support, priority of outcomes, level of impact of barriers, and stage of implementation of components, were found to be moderately or highly reliable with Cronbach's alpha reliability coefficients above .80; in fact, the alpha levels were above .90 for three of the four scales.

Administration of the mail questionnaire occurred in four waves between June 1 and September 1, 1993, based largely on procedures developed by Dillman (1978). Descriptive and inferential statistics were computed for all quantitative data. Open-ended items were analyzed using an inductive content analysis procedure described by Patton (1980) and Guba and Lincoln (1985). This blending of qualitative and quantitative data provided the evidence needed for the study as well as the information needed to address the key questions posed in this paper.

Respondent Demographics

Nearly 55 percent of the local tech prep coordinators, the survey respondents, were employed by a two-year postsecondary institution, with the remaining employed primarily by secondary schools, school districts, or other secondary education agencies. Regardless of their organizational affiliation, tech prep coordinators tended to be employed in mid-level managerial positions, such as a community college career dean or regional vocational education director. Some held "soft money" positions funded by a tech-prep grant and were reporting to a mid-level administrator. Nearly 40 percent of the respondents had been employed as tech prep coordinators for 13 to 24 months and 35 percent for more than 24 months. Only 37 percent of the respondents indicated that they held their tech prep coordinator positions full-time. Over 20 percent indicated they received no outside funding for the tech prep portion of their job and that tech prep had been incorporated into their regular responsibilities. Approximately one-half of the respondents said that they spent more than 20 hours per week on tech prep related activities; almost one-quarter spent over 40 hours per week, providing some indication of the resources and commitment being made to tech prep by local consortia.

Findings and Discussion

At present, the fifty states, District of Columbia, and territories are actively involved in implementation of tech prep programs utilizing funds from the federal Tech Prep Act. This represents dramatic growth in tech prep since prior to passage of the Tech Prep Act, fewer than 150 tech prep programs were known to exist across the nation (Stern cited in Northdurft and Jobs for the Future, 1990). After passage of the federal legislation, in FY'92 seed money was appropriated to the states to establish local initiatives, primarily for local planning. Then, beginning in FY'93, an estimated 850 local Tech Prep consortia were funded (Layton & Bragg, 1992). By FY'94, an estimated 1,000 local tech prep consortia were operating under the auspices of the federal legislation (Hull, 1993). With this level of effort, the seeds of tech prep were planted, many of which claimed to develop tech prep as a means of local educational reform. How are these tech prep initiatives similar to Newmann's reform theory? How are they different? These important questions are addressed according to each of Newmann's four reform themes.

Theme 1: Depth of understanding and authentic learning

Newmann (1993) contends that to restructure schools for systemic change, curriculum must move beyond the basics and into depth and authentic learning for students. First, we focus on the terms "authentic" which Newmann uses to describe teaching and learning practice, and the term "applied" which is used widely to describe tech prep curriculum. Very simply put, Newmann says the term "authentic" means more realistic, student-centered, and rigorous learning, requiring teachers have a deeper understanding of subject matter and students' "preconceptions of the subjects" (p. 6). Similarly, tech prep practitioners use the term "applied" to indicate teaching and learning that has a practical purpose, indicating it to be relevant and realistic in comparison to traditional curriculum (Parnell, 1985). In this sense, Newmann's first theme appears to strike a similar cord between educational reform and tech prep.

However, it is important to point out that the term "applied" has different connotations depending upon the audience, and no one definition appears to be commonly used. Within business and industry, individuals who can apply their knowledge in the work setting are a valuable commodity. Based on the SCANS report (1991), business and industry shows a keen interest in hiring employees who are able to connect the abstractness of theory with work, indicating their likely appreciation for an applied approach to curriculum. Consequently, it is not surprising that local tech prep coordinators perceive a high level of acceptance among employers for applied curriculum. However, on the other hand, educators sometimes perceive applied academics curriculum[2] to be less rigorous than traditional academic subject matter (Andrew & Grubb, 1992). Applied academics have been linked to remedial courses, for example basic math courses utilizing activities such as balancing a checkbook. In this case, the teaching and learning may be reality based; however, it also not particularly rigorous, jeopardizing one of the "pillars" of restructuring theory.

The federal tech prep legislation requires that curriculum development include a common core of math, science, communications (including applied academics), and technology. Indeed, our national tech prep study indicated that much of the curriculum development associated with local tech prep consortia revolved around the introduction of applied academics courses and applied teaching methodologies. This approach was especially predominant at the secondary level where 86 percent of respondents indicated adding applied academics (commercially or locally developed) as the most prevalent way of reforming curriculum for tech prep. Curriculum change of any sort was much less frequent at the postsecondary level. In addition to applied courses, other academic and vocational integration was being attempted with tech prep, but much less often. Fewer than one-half of the respondents indicated that curriculum was being organized around occupational clusters and career pathways, career academies, interdisciplinary courses, and/or work-based learning—all approaches that might make student learning more authentic. Unfortunately, at present, empirical evidence of the effectiveness of any of these approaches is not available, pointing to an urgent need for research and evaluation regarding new tech prep curriculum.

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[2] Within the tech prep community, applied academics curriculum is associated widely with mathematics, science, and communications courses of the Center for Research and Development (CORD). This group defines applied academics as the "presentation of subject matter in a way that integrates the academics discipline ... with personal work-force applications" (Pedrotti & Parks, 1991, p. 70). For more information about the curriculum, see Hull & Parnell (1991).

Continuing with questions posed by Newmann, is there local ownership for applied tech prep curriculum, especially by teachers? Are teachers and other stakeholders able to work cooperatively on behalf of tech prep? In terms of local ownership and the creation of collaborative cultures, findings from our national study reveal serious concerns. A top rated barrier to local implementation of tech prep was the lack of joint planning time for academic and vocational faculty and secondary and postsecondary faculty, indicating a frustration when local practitioners were unable to carry out collaborative planning.[3] Moreover, results of a factor analysis indicated that fourteen of fifty items in the barriers subscale appeared in a factor we labeled simply "resistance to tech prep", indicating opposition from academic and vocational educators, administrators, and counselors. We concluded, "this factor portrays tech prep as a concept that may have difficulty rallying support from some of the stakeholder groups often solicited to assist in implementing it" (p. 71). This finding does not support the notion of strong local ownership for tech prep, at least during the early years of implementation.

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[3] Barriers to the implementation of tech prep were a primary focus of our study. They were examined in two ways. First, respondents were presented with fifty barriers and asked to rate the level of impact of each according to the following scale: 1=none, 2=very minor, 3=minor, 4=moderate, 5=major, and 6=very major. An aggregated mean score was obtained for each of fifty barriers, providing a simple ranking of respondents' perceptions of the fifty barriers level of impact. Second, the fifty barriers were subjected to a factor analysis to identify latent variables in the perceived barriers to implementation of tech prep. Data from the barriers subscale were analyzed using principal axis factor (PAF) extraction with varimax rotation. Factor analysis solutions were carried out with other procedures including the computation of oblique solutions; however, these solutions were deemed much less useful in identifying the latent variables in the barriers subscale than the PAF extraction.

Are there parallels between Newmann's theme of "depth of understanding and authentic learning" and tech prep? We believe that generally the concepts of "authentic" and "applied" may be somewhat similar. Our results suggest similar strategies may be employed to structure student learning under either label, e.g., cooperative learning, teaming, project-based activities. However, with tech prep, different strategies may also be employed, e.g., work-based learning, career academies, occupational pathways. These strategies may represent alternative means of meeting Newmann's theme, but are not acknowledged by mainstream educational reform approaches. Finally, to what extent is tech prep curriculum linked to high standards, high incentives/high stakes, local empowerment, or collaborative organization? Our study suggests difficulties with creating the kinds of collaborative environments needed for designing and delivering tech prep; however, our findings may be too preliminary to make such judgments. Similarly, with data on student outcomes not yet available, we do not know the relationship between tech prep curricular approaches and student academic performance to draw conclusions about "high standards" or "high stakes". Clearly, all of these questions deserve more serious attention to help us better understanding tech prep and "authentic" learning as a basis for educational reform theory.

Theme 2: Success for all students

Based on our national study of tech prep implementation, conflicting views are evident concerning who should be the recipients of tech prep. Is tech prep to be a curriculum that reaches all students or should it address only a segment of the student population, such as the 'neglected majority'? Tech prep coordinators were asked to indicate the class-rank percentiles of students they viewed to be the primary target group for their local programs. (The survey question did not specify the secondary or postsecondary level since, as federally authorized, tech prep is to be a formally articulated curriculum facilitating secondary students' transitions into postsecondary education.) Nearly one-half of the coordinators selected the 25^{th}-75^{th} percentile, the so-called 'neglected majority' as the primary target group for tech prep. Another 24 percent of the coordinators selected the 50^{th}-75^{th} percentile as the primary audience. Interestingly, only 11 percent of the coordinators indicated that tech prep was for all four quartile groups, in other words, for 'all' students. Virtually no respondents described the 75^{th}-100^{th} class-rank percentile—the college bound—or the 1^{st}-25^{th} class-rank percentile group as the primary target group for tech prep.

These findings suggest that tech prep is targeted to those students whose academic performance ranks them below the top quartile of college-bound students but above those students needing academically-oriented special education. Most respondents viewed tech prep as a curriculum for the 'neglected majority' as was advocated by Parnell (1985) nearly a decade ago. Indicative of these goals were the following statements about the purpose of tech prep: "[to] eliminate the general track," "to provide appropriate educational opportunities for a larger number of students," and "to develop the 'neglected majority' so they are prepared with marketable skills." These findings show that, in and of itself, tech prep is *not* viewed by the majority of local tech prep consortia as a curricular approach for all students. However, in combination with the college track, tech prep may be seen as a way to strengthen education for the majority of students. In so doing, tech prep may represent a strategy to attract an even higher academically prepared group (50th - 75th percentile) than has been associated with traditional vocational education, especially at the secondary level. At the same time, it appears tech prep is not perceived widely to be targeted to at-risk or special population students. Recent findings reported by Boesel et al. (1994), as a part of the National Assessment of Vocational Education (NAVE), concur with our conclusion. They wrote

> [S]pecial population students tend to be a secondary consideration in developing tech prep .... although the majority of programs are making an effort to assure that they are included.... On balance, we think that more attention should be paid to developing tech-prep programs in sites with high concentrations of special populations and preparing such students to enter tech-prep programs and benefit from them, whatever their location. (p. 128-129)

These findings indicate that within the hierarchical structure of the educational system, tech prep remains a curricular track, thereby itself perpetuating the nation's system of tracking. Specific to tech prep, the target population is the middle-ability student who plans to matriculate primarily to the community college leaving the brightest students to enter university study and the least academically capable to prepare for other employment or other educational options. In this sense, tech prep appears to reinforce existing school tracks, with tech prep replacing general education or vocational education and sometimes a combination of the two. Does this approach increase options for students not destined for traditional collegiate preparation? Does it empower those at risk of school failure? Does it increase social capital in schools? As of yet, these questions cannot be answered; however, strong evidence of the perpetuation of tracking raises concern about how opportunities for upward mobility may be changed with tech prep. In the future, such questions must be addressed to better understand how tech prep fits with mainstream educational reform and how it influences student success.

Theme 3: New roles for teachers

Newmann contends that the roles teachers play within their classrooms have the greatest direct influence on students. Given that, how have teachers' roles been impacted by recent reform efforts within schools? How have they been affected by tech prep in particular? Newmann contends little experience and no formal training in teachers' new roles are two factors that to lead to the failure of educational reforms. Findings from our national study of tech prep implementation indicate that, at least to some extent, local tech prep coordinators are aware of this pitfall. Over 20 percent of federal funds have been used to provide staff development for tech prep, primarily involving secondary teachers. Respondents also indicate that in-service has occurred with other educators such as counselors, personnel at the postsecondary level, and local business representatives. Topics such as applied academics, integration of academic and vocational education, curriculum development, and guidance and counseling have received a great deal of attention, providing information about the *strategies* for delivering and implementing tech prep.

In addition, respondents were in consensus about the foci for tech prep initiatives requiring collaborative arrangements, in turn leading to new roles and responsibilities for teachers. For example, over 90 percent of respondents indicated that formal articulation agreements, vocational and academic curriculum integration, and collaboration between educators and employers were a formally stated goal of their tech prep initiatives—all activities requiring a high degree of collaboration and new roles and responsibilities. What are these new roles? Of course they are multifaceted and multidimensional, including teacher, facilitator, counselor, marketer, planner, curriculum developer, articulation agreement developer, and partner with business, industry, and labor. Unfortunately, the extent to which teachers are really empowered to carry out these roles on behalf of tech prep is unknown. The extent to which organizations create collaborative structures to support these new roles and responsibilities is also unknown. However, these are questions that must be addressed if we are to understand tech prep within the broader context of educational reform, calling for much more rigorous research in the area.

On the other hand, some issues linked to teachers' roles and tech prep are becoming clearer and warning signs are blinking. First, respondents indicated that one of the major barriers to tech prep implementation was the failure of four-year colleges and universities to recognize tech prep as a legitimate educational reform, denying students college-level credits for applied academics courses. Linked to this issue is the fact that many teacher education programs continue to produce traditional teachers who may have little understanding of the roles and responsibilities inherent in tech prep. When rating the impact of other barriers to tech prep, 62 percent of the local coordinators said that the lack of knowledge and skills among education personnel in how to implement educational change impacted implementation of tech prep in a moderate, major or very major way. Combined with the previous results, this suggest the entire educational profession has a long way to go before dealing effectively with teachers' roles and responsibilities in ways that support tech prep as an approach to educational reform.

Theme 4: Schools as caring communities

When examining data from our study in relationship to this theme, it is apparent that little has been accomplished to use tech prep as a vehicle to establish "schools as caring communities" as defined by Newmann. Whereas tech prep is implemented via a local consortium arrangement involving secondary and postsecondary schools and sometimes business and industry as well, these consortia primarily function in an administrative (functional and fiscal) rather than collaborative (coordinating and caring) capacity. Furthermore, one of the top rated barriers to local tech prep implementation was difficulty in dealing with educational bureaucracies, suggesting the consortium arrangement has not helped to break through pre-existing organizational and political structures. This barrier points to the issues tech prep may face as an educational reform within and across institutions that join together as local consortia; it may be symptomatic of obstacles that extend throughout the educational system (i.e., elementary, secondary, and postsecondary) and the local, state, and federal levels. It is a barrier that is repeatedly identified in the educational reform literature and associated with problems in making systemic reform successful (Fullan, 1991).

Another indicator that the notion of "schools as caring communities" is not pervasive with tech prep is the fact that relatively few respondents identified "family" oriented curriculum approaches as defined by Newmann. Interestingly, only about one-third of respondents reported working on tech prep curriculum reform that would involve career academies (Stern, Raby, & Dayton, 1992), a notion that seems strikingly similar to what Newmann described as "'families' of teachers and students that stay together for 2 or more years and professional development programs that support team projects to benefit departments, grade levels, or the school as a whole" (p. 8). Other approaches that approximate the "family" concept such as work-based learning (e.g. youth apprenticeships) as well as cohorts of students engaged in advanced-skills programs (especially at the postsecondary level) were not used widely with tech prep. The lack of attention to these curricular efforts provides further evidence of a void of restructuring in any extensive way that might influence conventional patterns of schooling.

Although difficult to explain why curriculum emerges as it does, it is very important to point out that the national study respondents felt strongly about a lack of resources of all types—certainly the lack of staff, time, and money. Nearly 35 percent of coordinators indicated that a lack of resources was a major or very major barrier to tech prep implementation. Without adequate resources, it is difficult to picture any organization as exuding "caring" as explained by Newmann. Rather, it seems more likely to see various stakeholder groups pitted against one another in pursuit of whatever is needed to assist them to reach their own desired goals. Other findings from the study bolster this conclusion. Academic faculty, four-year colleges and universities, and parents represent a few of the stakeholder groups that seem to have interests contrary to other groups, such as vocational faculty, postsecondary administrators, and counselors. Given these circumstances, how reasonable is it to ask individuals to extend their contributions even further? How feasible is it to expect the emergence of "caring communities"? Taken together, these barriers suggest concern about organizational structures used for tech prep, creating the need for more research to uncover other reform strategies and a more complete theory of educational reform.

Summary

Is tech prep *really* reform? This paper has raised that question and, in several respects, raised more questions than answers to address it. On a rather simplistic level, our national study of tech prep implementation suggests there are loosely defined relationships between concepts such as "authentic" learning and "applied" education. Similarly, there are some interesting parallels between teacher roles in mainstream reforms and tech prep. However, it may be too early to know exactly how similar or different these approaches really are to one another. Clearly, without additional rigorous research, it will be difficult to know the nature of the relationship between tech prep and any other educational reform, on any philosophical or strategic level.

The questions posed throughout this paper in regard to the four themes of authentic learning, success for all students, new roles for teacher, and schools as caring communities deserve much greater attention. They should also be considered in light of the issues raised by Newmann (1993) in regard to high standards, high incentives/high stakes, local empowerment, and collaborative organization. Without a more in-depth understanding of how these phenomenon interrelate, i.e., how reform themes and strategies influence and are influenced by restructuring policy and practice, the future of tech prep as an educational reform is unclear. With this paper, we plead for more rigorous work to develop theories of educational reform that give serious consideration to school-to-work oriented approaches such as tech prep. We issue a call to begin the dialogue about tech prep as a vehicle to mainstream educational reform, a dialogue that may ultimately impact our nation's entire educational system.

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ATTITUDES OF NORTH CAROLINA PRINCIPALS TOWARD SECONDARY VOCATIONAL EDUCATION PROGRAMS IN TECHNOLOGY EDUCATION

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Introduction

Many changes have occurred in public education and many different programs in the public schools have been reviewed and evaluated as school reform efforts have been developed (Tyler, 1987). However, many vocational education programs have remained the same for many years and the courses taught have failed to keep up with technology and new developments (National Research Council, 1988). All vocational education programs must stay in stride with advancements in technology to provide students with a quality education. Frantz, Strickland, and Elson (1988) and the National Research Council (1988) recommended that vocational education teachers constantly upgrade their curricula and programs, as well as implement more science and math instruction in vocational education courses. Only 18% of high school vocational education courses teach math, although students often learn math and other academic subjects in practical situations (Sperling, 1989).

Changes in vocational education will require the approval and support of school administrators since they have authority and influence in programs and curricula at the school and school system levels. Thompson (1986) reported in an Arkansas study that administrators' opinions are very important since administrators' decisions often drastically affect program operations and directions. The Council of Chief State School Officers (CCSSO) made numerous recommendations for changes in the Carl Perkins Vocational Education Act when Congress began debate on the reauthorization of the Act in March 1989 (Walker, 1989). The recommendations included requiring secondary level vocational programs to place greater emphasis on academic preparation, development of closer relationships with community colleges, and implementing more intensive efforts to hold school administrators "accountable" for the success of their students (Walker, 1989). The CCSSO and the American Association of School Administrators (AASA) also recommended that vocational programs not be judged by a single criterion, such as a vocational program's job placement rate, but according to a mixture of other factors (Walker, 1989).

If school administrators are to be held more accountable for the success of students and consequently of the secondary vocational programs as Tyler (1987) indicated and the Council of Chief State School Officers recommended, it is important to know and understand how school administrators perceive vocational education programs. Vocational programs are different from school to school and are administered differently from school system to school system. A portion of the differences may exist because of the relationships between school administrators and vocational teachers and the administrators' perceptions of the vocational education programs. A 1979 national study included in its findings that a significant number of school administrators do not support programs providing high school students opportunities to develop salable job skills through vocational programs, and these administrators will determine whether or not vocational education is available in the secondary schools (United States Department of Education, 1979).

Significance of the Study

Administrators are the instructional leaders in their schools and/or school systems and their leadership in curriculum and instructional reforms are important. Administrators with negative attitudes toward vocational education and/or reform recommendations will probably not be successful in implementing these initiatives in their schools or school systems. This study provides vocational educators with information that can be analyzed to overcome or improve situations that could have a negative effect on technology education. Strategies may also be developed to enhance technology education programs so they can continue to be important and viable components of public education.

Statement of the Problem

The purpose of the study was to determine building level administrators' attitudes toward vocational programs in technology education at their schools. More specifically, the objective of this study was to determine the attitudes of North Carolina secondary school principals concerning issues related to their technology education programs.

Theoretical/Conceptual Base and Related Literature

Sperling (1989) stated that vocational courses should prepare students for many different jobs in an occupational area, rather than one specific job. He also stated that in schools ranking at the bottom in terms of academic achievement and poverty, students had less access to vocational courses, less access to advanced-level vocational courses, and less access to supervised work-study programs than students in other schools. To address the enrollment issues, vocational education may need to move away from multi-course programs and multi-year, multi-period courses to shorter and more flexible offerings (National Research Council, 1988).

Ninety-seven percent of all high school students take at least one vocational course and 75% of all vocational courses are being taken by college bound students (Sperling, 1989). The National Assessment of Vocational Education reported that administrators may be at least partially responsible for students failing to enroll in vocational courses because they once allowed vocational teachers to make presentations in classes and assemblies to recruit students, and now administrators restrict those activities (National Assessment of Vocational Education, 1988).

Administrators are the instructional leaders in their schools and/or school systems and their leadership in curriculum and instructional reform is important. Administrators with negative attitudes toward vocational education and/or reform recommendations will probably not be successful in implementing these initiatives in their schools or school systems. This study provides vocational educators with information that can be analyzed to overcome or improve situations that could have a negative effect on technology education. Strategies may also be developed to enhance technology education programs so they can continue to be important and viable components of public education.

Research Methods and Procedures

Population

The population for the study included the building level administrators (principals) in North Carolina who had Technology Education as a part of their school curricula offerings during the 1992-93 academic year. The population was identified by first identifying the schools that offered technology education (N = 369) and than identifying the principals of those schools. A random sample (n = 188) was drawn from the population using a computer generated random selection process.

Instrumentation

The data collection instrument for the study was research developed and addressed the administrators' attitudes toward technology education course offerings and programs. Content validity was assessed by a committee of experts in technology education. The instrument was field tested to determine clarity. The coefficient of the stability was found to be .96 for the instrument.

Data Collection

The instrument, along with a cover letter, was mailed on June 10, 1993. The members of the sample were asked to return the completed survey by June 30,1993. The vocational director from the local education agencies who had principals selected in the research sample was also sent a letter on June 10, 1993, and asked to contact their principals and urge them to complete and return the survey instruments they had received. A follow-up mailing was sent to those members of the sample who failed to respond to the first mailing on June 30, 1993. Those persons receiving a follow-up mailing were asked to return the completed survey by July 9, 1993. The surveys returned by the late respondents (follow-up mailing) were kept separate from those received after the first mailing.

A total of 76 responses was received from the principals with technology education programs after the first mailing and 36 additional responses were received from the non-responding principals after receiving the follow-up mailing. Responses received from the follow-up mailing were statistically compared on all variables with the initial responses using Hotelling-Lawley Trace statistic which is the appropriate multivariate analyses of variance (MANOVA) to use when using two independent samples and no significant differences were found ($F = 0.606$, $p = 0.4543$). According to Miller and Smith (1983), late responses have been found to be very similar to non respondents. Therefore, since no statistically significant differences between early and late respondents were found, the data sets were combined for statistical purposes and were assumed to be representative of the population of principals who had technology education programs at their schools during the 1992-93 academic year. The combined total usable response from the sample was 112 or 60%.

Analysis of Data

The data for this study were analyzed by descriptive and inferential statistical procedures. Descriptive statistics were used for all items in the study and frequencies, means, standard deviations, and percentages were reported. Descriptive statistics were used to answer the research objective.

Findings

Demographic Data for Principals of Technology Education Programs

The principals of the technology education programs ranged between 32 and 59 years of age and averaged 47.20 years old. The administrators' tenure as principals ranged from one to 29 years with a mean of 11.34 years. Approximately 54% ($n = 58$) of the administrators took at least one technology education or industrial arts education course in high school but only 5.56% ($n = 6$) of those taking these courses indicated they had received four or more credits in either technology education or industrial arts education. Approximately 45% ($n = 48$) of the principals reported they took at least one vocational education course other than technology education or industrial arts education during high school. Administrators who had been vocational education teachers in areas other than technology education or industrial arts education accounted for 7.14% ($n = 8$) of the sample and 7.14% ($n = 8$) of the principals were also former technology education or industrial arts education teachers. Approximately seven percent ($n = 8$) of the administrators had attended at least one State TSA Convention and 1.79% ($n = 2$) had attended at least one National FFA Convention during the time period from 1987-1992. Approximately 78% ($n = 97$) of the principals indicated they would attend state and national conventions if they were invited by their technology education teachers to do so. Approximately 72% ($n = 76$) of the principals classified their schools as being in a rural setting, however, 25% ($n = 28$) indicated that 1000 or more students were enrolled at their schools.

Attitudes of Building Level Administrators Concerning Technology Education Programs and Course Offerings

The research objective of the study was to determine the attitudes of building level administrators in North Carolina concerning their technology education programs and course offerings. The administrators were asked to rate each of the statements on the data collection instrument according to the following scale: 1 = Strongly Disagree (Respondent disagreed with the statement without exception); 2 = Disagree (Respondent disagreed with the statement, but was not 100% opposed to the statement); 3 = Slightly Disagree (Respondent disagreed with some elements of the statement, but not the whole statement); 4 = Slightly Agree (Respondent agreed with some elements of the statement, but not the whole statement); 5 = Agree (Respondent agreed with the statement, but not 100% supportive of the statement); or 6 = Strongly Agree (Respondent agreed with the statement without exception).

Interval data were collected on each of the dependent variables in this study. The intervals for data collection and statistical analysis were those defined in the previous paragraph. However, for practical interpretation of the data, the mid-points between defined intervals were used. For example, a rating of 3.50 to 4.49 was interpreted as slightly agree.

The research objective was addressed by categorizing the 72 statements used to obtain the attitudinal data into 8 categories: Curriculum Issues; Program Accountability Issues; Descriptive Program Issues; Program Image; Technical Content Literacy; Academic Integration; Vocational Student Organization (TSA); and Teacher Performance. Descriptive statistics, means, standard deviations, and frequencies were used to describe the attitudes registered by the principals for each of the statements.

Table 1 contains the mean ratings of the attitudes of the building level administrators (principals) toward the statements designed to address technology education curriculum issues. The principals indicated that Fundamentals of Technology courses (M = 5.20, SD = 0.80) were the most appropriate technology courses to included in a contemporary high school curriculum. However, as indicated in Table 1, the principals agreed that all the technology education course offerings currently being offered in the public schools of North Carolina should be included in a contemporary high school curriculum. The administrators indicated they slightly disagreed (M = 3.05, SD = 1.56) with the statement "technology education teachers conducting programs which focus on woodworking and metal working is an out-of-date concept."

The principals also indicated they agreed that the high school technology education curriculum should provide students with a mix of occupational specific skills which are needed to get good jobs or to pursue further training at the post-secondary level (M = 5.22, SD = 0.79) and that "the high school academic and technology education curricula should be integrated so students are well equipped with fundamental academic skills which are enhanced through applied activities in technology education courses" (M = 5.20, SD = 0.99). The principals slightly agreed (M = 4.20, SD = 1.45) with the recommendation of requiring all students to complete at least one technology education course in order to meet graduation requirements.

The principals only slightly agreed (M = 3.61, SD = 1.45) that students should be encouraged to enroll in programs requiring work experience, like Cooperative Work Experience programs. However, the principals also indicated they agreed (M = 4.64, SD = 1.31) that technology education courses should be taught by certified technology education teachers.

The principals reported they agreed (M = 5.25, SD = 0.81) that articulation of technology education training between secondary and post-secondary institutions should be increased and they agreed (M = 5.04, SD = 0.91) that technology education programs should be fully articulated with

Table 1

School Administrator's Attitudes Toward Statements Concerning Technology Education Curriculum Issues

Statement	n	M[a]	SD
The high school technology education curriculum should be revised to provide students with a mix of occupational specific skills which are needed to get good jobs or to pursue further training at the post-secondary level.	108	5.22	0.79
The high school academic and technology education curricula should be integrated so students are well equipped with fundamental academic skills which are enhanced through applied activities in technology education courses.	112	5.20	0.99
The articulation of technology education training between secondary and post-secondary institutions should be increased.	112	5.25	0.81
Technology education teachers conducting programs which focus on woodworking and metal working is an out-of-date concept.	112	3.05	1.56
Each of the following types of technology education course offerings should be included in a contemporary high school curriculum:			
Communications Systems	110	5.15	0.91
Construction Systems	110	4.91	0.82
Manufacturing Systems	110	4.93	0.81
Transportation Systems	110	4.84	0.85
Fundamentals of Technology	110	5.20	0.80
Technology Studies	110	4.98	0.93
All students should complete at least one technology education course in order to meet graduation requirements.	112	4.20	1.45
More students should be encouraged to enroll in programs requiring work experience while attending high school; for example, Cooperative Work Experience programs.	112	3.61	1.45
Technology education courses should be moved from high schools to community colleges.	112	2.32	1.30
If a high school offers a course in technology education, such as Principles of Technology, it should be taught by a certified technology education teacher.	112	4.64	1.31
Technology education programs should be fully articulated with community college programs through TECH-PREP agreements.	112	5.04	0.91

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

community college programs through TECH-PREP agreements. However, the principals disagreed (M = 2.32, SD = 1.30) with the statement "technology education courses should be moved from high schools to community colleges."

As reported in Table 2, principals agree that schools with technology education programs should have active advisory councils (M = 4.55, SD = 1.17), that employment of high school graduates in jobs that use the skills acquired in high school technology education courses should be increased for program accountability (M = 4.76, SD = 0.97), and that one objective of technology

Table 2

School Administrator's Attitudes Toward Statements Concerning Technology Education Program Accountability Issues

Statement	n	M[a]	SD
Employment of high school graduates in jobs that use the skills acquired in high school technology education courses should be increased for program accountability.	108	4.76	0.97
Technology education programs should consist of individual courses rather than multi-course, multi-year (scope and sequence) programs.	110	3.47	1.42
School administrators should have an in-depth knowledge and understanding of technology education programs.	110	4.71	0.93
One objective of technology education should be to prepare high school students for gainful employment in technologically related occupations.	112	4.88	0.93
Each school with a program in technology education should have an active advisory council.	112	4.55	1.17
The primary focus of secondary technology education should be occupational training.	112	3.23	1.23
School administrators should be held accountable for the success of technology education students and consequently, technology education programs.	112	3.71	1.42
The rate of student placement in technologically related occupations should not be a major factor in continuation of technology education programs.	108	3.59	1.33
Funds currently spent on technology education programs would be better spent on other vocational and/or academic programs.	110	2.38	0.99
When fully implemented, VoCATS (Vocational Competency Achievement Tracking System) will be an effective means of assessing the vocational competence of students enrolled in technology education courses.	112	4.34	1.10

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

education programs should be to prepare high school students for gainful employment in technologically related occupations (M = 4.88, SD = 0.93). The administrators also indicated they only slightly agreed (M = 3.59, SD = 1.33) with the statement, "the rate of student placement in technologically related occupations should not be a major factor in continuation of technology education programs."

The principals slightly disagreed that the primary focus of secondary technology education programs should be for occupational training (M = 3.23, SD = 1.23) and they slightly disagreed that technology education programs should consist of individual courses rather than multi-course, multi-year programs (M = 3.47, SD = 1.42). The principals also indicated they only slightly agreed (M = 4.34, SD = 1.10) that VoCATS would be an effective means of assessing the vocational competence of students enrolled in technology education courses.

The administrators indicated they disagreed (M = 2.38, SD = 0.99) with the opinion that funds currently being spent on technology education programs would be better spent on other vocational and/or academic programs. Though the principals implied that funding for technology education programs should continue, they only slightly agreed (M = 3.71, SD = 1.42) that school administrators should be held accountable for the success of technology education students and consequently, technology education programs. They agreed (M =4.71, SD = 0.93) with the statement "school administrators should have an in-depth knowledge and understanding of technology education programs."

Table 3 presents the attitudes of the principals toward selected statements concerning descriptive issues about technology education programs. The principals agreed (M = 4.91, SD = 0.82) that when setting the future course for technology education, educational leaders should consider employment opportunities in the service or business sectors related to technology.

The principals disagreed (M = 2.43, SD = 1.31) with the statement that "only students who wish to pursue a career/job in a technological field should enroll in technology education courses." The principals also slightly disagreed (M = 2.80, SD = 1.39) with the statement that technology education teachers should have smaller teaching loads than other teachers because of extra duties with TSA and laboratory management. They also slightly disagreed (M = 2.75, SD = 1.46) with the concept that all technology education teachers should be employed twelve months per year.

The administrators slightly agreed (M = 4.44, SD = 1.05) that provisions should be made so that technology education courses receive recognition to meet admission requirements for the University of North Carolina system. They agreed (M = 5.19, SD = 0.80) with the statement that technology education courses are appropriate for college bound students.

Table 4 displays the attitudes of the principals toward statements concerning the image of technology education programs. The principals slightly agreed (M = 4.41, SD = 1.15) with the statement that technology education is an exemplary model of the educational reform movement. They also disagreed with the statements "technology education courses are not important components of the high school curriculum, " (M = 1.86, SD = 1.11) "instruction in technology education does not support or enhance the goals of general secondary education," (M = 2.20, SD = 1.12) and "the benefits students derive from technology education are no longer important" (M = 1.62, SD = 1.02).

The principals indicated they strongly disagreed (M = 1.38, SD = 0.95) with the statement "technology education is no longer needed in the public schools." They also indicated they slightly disagreed (M = 3.00, SD = 1.28) with the statement "the curriculum in technology education has kept pace with the changes in technology."

The administrators indicated they agreed (M = 4.54, SD = 0.85) with the statement "technology education provides motivation for students to continue their education beyond high school." They also indicated they slightly disagreed (M = 2.73, SD = 1.35) with the opinion that students who enroll in technology education courses compromise their social status among students not enrolled in technological education courses.

The findings of the study indicated that the principals slightly agreed (M = 4.16, SD = 1.34) that the majority of the people in their communities regarded technology education as an important part of the high school program. They also slightly agreed (M = 4.16, SD = 1.34) with the statement "technology education courses should be credited toward satisfying high school graduation requirements for science courses."

Table 3

School Administrator's Attitudes Toward Statements Concerning Descriptive Issues About Technology Education Programs

Statement	n	Ma	SD
In setting the future course for technology education, educational leaders should consider employment opportunities in the service or business sectors related to technology.	110	4.91	0.82
Technology education teachers should have smaller teaching loads than other teachers because of extra duties with TSA and with laboratory management.	112	2.80	1.39
Only students who wish to pursue a career/job in a technological field should enroll in technology education courses.	112	2.43	1.31
All technology education teachers should be employed twelve months per year.	110	2.75	1.46
Technology education courses are appropriate for college bound students.	108	5.19	0.80
Provisions should be made so that technology education courses receive recognition to meet admission requirements for the University of North Carolina system.	108	4.44	1.05

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

Table 5 displays the attitudes expressed by the school principals toward technological literacy. From reviewing the different mean scores, it is apparent they tend to agree with the need to increase technical literacy. This belief is exhibited by their agreeing (M = 4.84, SD = 1.02) that teachers in all grade levels and subject areas should be encouraged to incorporate materials about the economic

aspects of technology. They also indicated they agreed (M = 5.30, SD = 0.85) with the statement "beginning in kindergarten and continuing through the twelfth grade, all students should receive

Table 4

School Administrator's Attitudes Toward Statements Concerning the Image of Technology Education Programs

Statement	n	Ma	SD
Technology education is an exemplary model of the educational reform movement.	108	4.41	1.15
Technology education is no longer needed in the public schools.	110	1.38	0.95
Instruction in technology education does not support or enhance the goals of general secondary education.	108	2.20	1.12
Technology education courses should be credited toward satisfying high school graduation requirements for science courses.	110	4.16	1.34
The majority of the people in my community regard technology education as an important part of the high school program.	110	4.16	1.34
The benefits students derive from technology education are no longer important.	110	1.62	1.02
Changing the name of the industrials arts program of studies to technology education broadened the public perception of the program to one with a contemporary forward-looking image.	110	4.20	1.28
The curriculum in technology education has kept pace with the changes in technology.	108	3.00	1.28
Technology education courses are not important components of the high school curriculum.	112	1.86	1.11
Students who enroll in technology education courses compromise their social status among students not enrolled in technology education courses.	112	2.73	1.35
Technology education provides motivation for students to continue their education beyond high school.	112	4.54	0.85

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

some systematic instruction about technology to increase technological literacy of US citizens. The principals also indicated that it was not unreasonable to add a technological literacy emphasis as a part of social study, science, math, reading, and English courses.

On the basis of the findings presented in Table 6, it appears that public school principals in North Carolina agree (M = 4.71, SD = 0.96) that technology education courses provide an effective vehicle for integrating academic and vocational education skills and they agree (M = 4.93, SD =0.87) that technology education courses provide an effective vehicle for developing computer literacy competencies. They also agree that ongoing efforts should be expanded and accelerated to upgrade the scientific content of technology education courses (M = 5.11, SD = 0.86) and that a substantial amount of applied science principles and concepts should be infused into the high school technology education curricula (M = 4.91, SD = 0.81). The principals also indicated they slightly disagreed (M = 2.62, SD = 1.27) with the statement "there should be less emphasis on the teaching of technical content/skill courses to high school students."

Table 5

School Administrator's Attitudes Toward Statements Concerning Technical Literacy

Statement	n	Ma	SD
Beginning in kindergarten and continuing through the twelfth grade, all students should receive some systematic instruction about technology to increase technological literacy of US citizens.	112	5.30	0.85
Schools are expected to do too much already. Adding an technological literacy emphasis (as a part of social studies, science, math, reading, English, etc.) is unreasonable.	112	2.45	1.29
State education leaders, school administrators, and school boards should develop and implement a plan to foster instruction about technology.	112	4.91	0.79
Teachers in all grade levels and subject areas should be encouraged to incorporate materials about the economic aspects of technology.	112	4.84	1.02
School administrators, teachers, state departments of education, and teacher education personnel should participate in professional development activities focused on the integration of technology into the curriculum in kindergarten through twelfth grade.	110	4.85	1.09
Representatives of business and community leaders, particularly at the local and state levels, should meet with school officials to implement cooperative efforts to bring more technology into all courses in the high school curriculum.	112	4.77	0.97
Science teachers and technology teachers should jointly examine existing curricula and instructional materials to identify opportunities to incorporate subject matter from the technological subject matter into science instruction.	112	5.12	0.78
Instructional materials in elementary and secondary science courses should be designed to provide students opportunities for increased understanding of technology.	110	5.11	0.81

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

Table 6

School Administrator's Attitudes Toward Statements Concerning Academic Integration in Technology Education Programs and Course Offerings

Statement	n	M[a]	SD
Technology educators should serve on selection committees for mathematics and science instructional materials such as textbooks and likewise, mathematics and science educators should serve on selection committees for instructional materials for technology.	112	4.57	0.91
Ongoing efforts should be expanded and accelerated to upgrade the scientific content of technology courses.	112	5.11	0.86
Teacher education programs in technology education should continue to stress applied learning, but should strengthen instruction in science.	112	4.70	0.95
A substantial amount of applied science principles and concepts should be infused into the high school technology education curricula.	112	4.91	0.81
The emphasis in our secondary schools should be on developing students' basic academic skills; therefore, there should be less emphasis on the teaching of technical content/skill courses to high school students.	112	2.62	1.27
Technology education courses provide an effective vehicle for the integration of academic and vocational education skills.	112	4.71	0.96
Technology education courses provide an effective vehicle for developing computer literacy competencies.	112	4.93	0.87
The technology education program needs to more effectively meet the needs of special population groups.	112	4.59	1.05

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

Principals in North Carolina public schools appear to be supportive of the TSA component of their technology education programs as indicated by reviewing the findings displayed in Table 7. The principals slightly disagreed (M= 2.57, SD = 1.38) with the statement, "vocational student organizations such as the TSA are out dated ideas whose time have passed," and slightly agreed (M= 4.11, SD = 1.27) with the statement, "vocational student organizations, like TSA, should be part of every high school's co-curricular activities. Further, the principals indicated they slightly agreed with the statement, "all schools with technology education programs should have TSA chapters" (M = 3.82, SD = 1.36). However, they disagreed (M = 2.41, SD = 1.15) with the statement, "the primary purpose of the TSA is to develop leadership among technology education students."

Table 7

School Administrator's Attitudes Toward Statements Concerning the Vocational Student Organization (TSA) Component of the Technology Education Program

Statement	n	Ma	SD
All schools with technology education programs should have Technology Student Association (TSA) chapters.	112	3.82	1.36
The TSA should revise the nature, focus, and awards structure of its contests and activities to open new categories of competition in addition areas to those which currently exist.	110	3.82	1.36
The TSA should encourage membership by students unable or unwilling to participate in a 4-year program of technology education.	108	4.33	1.24
Vocational student organizations such as the TSA are out dated ideas whose times have passed.	112	2.57	1.38
Technology educators are unduly driven by TSA contests and activities and place little emphasis on instruction in technical content or curriculum reform.	110	2.87	1.13
A substantial amount of marketing and distribution techniques, (such as economics, pricing, packaging, futures trading, value added processes, and advertising) should be infused into high school technology education courses.	110	4.15	1.04
The TSA is the primary reason students enroll in technology education courses.	112	2.41	1.15
The primary purpose of the TSA is to develop leadership among technology education students.	112	3.84	1.20
Vocational student organizations, like TSA, should be part of every high school's intra-curricular activities.	112	4.12	1.27
Vocational student organizations, like TSA, should be part of every high school's co-curricular activities.	112	4.11	1.27

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

As indicated in Table 8, the North Carolina public school principals agreed that their technology education teachers were doing an above average to superior job in each of the eight areas identified by the State's Teacher Performance Appraisal System. However, the principals indicated they only slightly agreed (M = 4.44, SD = 1.27) that their technology education teachers were performing at an above average to superior level in the area of housekeeping and classroom/laboratory organization and management.

Table 8

School Administrator's Attitudes Toward the Teaching Performance of Technology Education Teachers

Statement	n	M[a]	SD
The technology teacher(s) at my school does an above average to superior job managing his/her instructional time.	112	4.62	1.12
The technology teacher(s) at my school does an above average to superior job managing the behavior of his/her students.	112	4.71	1.21
The technology teacher(s) at my school does an above average to superior job with his/her instructional presentations.	112	4.71	1.10
The technology teacher(s) at my school does an above average to superior job with his/her instructional monitoring of student performance.	112	4.71	1.10
The technology teacher(s) at my school does an above average to superior job providing his/her students with instructional feedback.	112	4.79	1.09
The technology teacher(s) at my school does an above average to superior job with his/her housekeeping and classroom/laboratory organization and management.	112	4.44	1.27
The technology teacher(s) at my school does an above average to superior job facilitating instruction.	112	4.52	1.15
The technology teacher(s) at my school does an above average to superior job communicating within the educational environment.	112	4.71	1.17
The technology teacher(s) at my school does an above average to superior job performing non-instructional duties.	112	4.82	1.19

a. Means were based on responses to a six-point scale where 1=Strongly Disagree, 2=Disagree, 3=Slightly Disagree, 4=Slightly Agree, 5=Agree, and 6=Strongly Agree

Conclusions

The following conclusions were formulated as a result of the findings of this study:

1. In general, principals were very supportive of the technology education programs being offered in the public schools of North Carolina.
2. The high school technology education curricula should provide program graduates with the necessary occupational specific skills needed to get good jobs and/or pursue further training at the post-secondary level.
3. Technology education curricula should be integrated with the high school academic curricula so graduates will be well equipped with fundamental academic skills which have been enhanced through applied activities in the technology education courses.
4. The articulation of technology education training between secondary and post-secondary institutions should be increased and secondary technology education programs should be fully articulated with community college programs through TECH-PREP agreements.
5. The current technology education course offerings are appropriate for the curriculum of contemporary high schools and Fundamentals of Technology and Communications Systems are considered to be the best of the technology education courses currently being offered.
6. Technology education courses should be taught by fully certified technology education teachers.
7. Technology education courses should remain at the secondary level and **not** be moved to the community colleges.
8. Technology education should have as an objective to prepare graduates for gainful employment in technologically related occupations and employment of program graduates in jobs related to the skills acquired in high school technology education courses should be increased for program accountability.
9. Schools with programs in technology education should have active advisory councils for their programs. Representatives from business should also be used to help school officials identify ways of infusing more instruction about technology and technological advances into public school curricula.
10. Funds being spent on technology education programs **would not** be better spent on other vocational and/or academic programs.
11. Technology education courses are important components of the public high school curriculum and there is a need for technology programs in the public schools of North Carolina.
12. The benefits students derive from technology education are still deemed important by public school principals.
13. Teachers in all grade levels and subject areas should be encouraged to incorporate materials about the economic aspects of technological advances.
14. Technology education courses provide opportunities for developing computer literacy competencies.

15. Teacher training programs for technology education should be revised to incorporate more science.

16. The Technology Student Association (TSA) is not viewed by administrators as a vehicle for recruiting students for technology education programs.

17. Technology education teachers are doing an above average job in all eight of the areas of teaching responsibility which are measured by the North Carolina Teacher Performance Appraisal System as well as in the are of housekeeping and classroom/laboratory organization and management.

18. There appears to be little support on behalf of the public school principals of North Carolina to offer extended employment contracts to technology education teachers.

19. Principals tend to be willing to substitute technology education courses for science courses to fulfill high school graduation requirements for science.

Implications and Recommendations

On the basis of the findings and conclusions, the following recommendations are suggested:

1. Local evaluations should be done of technology education programs to determine the strengths and weaknesses of the programs. It is recommended that the technology teachers provide the leadership for the local program evaluations but principals should have involvement in the evaluation process so their concerns can be obtained. Once the evaluations are completed, the technology teachers should solicit the assistance from their principals and local directors in addressing identified program weaknesses.

2. Local directors should work with local principals in establishing teams consisting of technology teachers and academic teachers to identify opportunities for increasing the instructional content about technology in academic curricula and for increasing science into the technology curricula.

3. If not in place, fully articulated TECH-PREP agreements should be developed for all technology education programs.

4. Local directors of vocational education should monitor the hiring of technology education teachers and insist, where possible, that only fully certified teachers be hired by their local school systems.

5. Local advisory councils should be establish at the school building level for all technology education programs. Local teachers should provide the leadership on the organization and establishment of the advisory councils but principals and local directors of vocational education should be heavily involved in the creation of the councils.

6. Teacher training programs technology education should review their curricula requirements and make revisions to increase science instruction if necessary.

7. Technology education teachers should work with their principals to better educate them on the advantages of having strong TSA programs as components of their local programs.

8. Technology teachers should extend invitations to their principals and local directors of vocational education to accompany them to state and national vocational student organization activities.

9. State vocational education leaders should explore the possibility of obtaining State Board approval for granting science credit for technology education courses.

10. Technology teachers should work closely with their guidance counselors to encourage the counselors to direct college bound students to enroll in their courses.

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Technology Education in Transition: Perceptions of Teachers, Administrators and Guidance Counselors

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Running Head: Perceptions of Technology Education

Technology Education in Transition: Perceptions of Teachers, Administrators and Guidance Counselors

The field of technology education has gone through considerable introspection and revision in the past twenty years. During this time technology educators have instituted multiple changes in curriculum, program requirements, and facilities (Volk, 1993). Daugherty and Boser (1993) stated that: "In the past ten years the philosophy, curricula, and methodologies used to guide the discipline may have changed more dramatically than they have in the preceding one hundred years" (p. 31). Waetjen (1989) supported this assertion when he indicated that the last decade has witnessed a startling change in what was once industrial arts and has now evolved into technology education. As the field of technology education continues to evolve, its unique mission to provide relevant and meaningful learning experiences that reinforce academic content and enhance higher-order thinking skills is becoming clearer (Johnson, 1992).

Through various means, thousands of administrators, teachers, and ancillary staff have been exposed to technology education in recent years. However, the field of study (and the profession) is still often referred to and thought of as "shop" (Clark, 1989). Clark further stated that, "This serves to accentuate the scope of the crisis, and the professional reaction (or lack thereof)" (p.7). Herschbach (1992) suggested that there seemed to be little doubt that by the end of the decade the transformation from industrial arts to technology education would be complete. There is less certainty, however, concerning public understanding of what technology education entails. Dugger (1994) submitted that with the evolution of the technology education discipline, many different opinions have developed about what is taught and where it should be taught. Some view technology as a part of science curriculum, while others think that it is more closely allied with engineering. Some schools place technology as a component of vocational education. Others believe that technology should be taught in an integrative manner with mathematics, science, social studies and other subjects.

Some efforts to integrate technology education into the total school environment have met resistance or failed because administrators, teachers, or ancillary staff members (i.e. guidance counselors) did not adequately understand the new role and purpose of technology education (Clark, 1989). Starkweather (1990) presented a holistic perspective of the problem of misperceptions by educational leaders external to the profession. He insisted that this problem was critical to the field regardless of whether common vision and understanding is held by leaders within the profession.

While professionals in technology education have made considerable strides in curriculum and program development, it is not clear whether the impact of this progression has been felt or understood by educational decision makers. A clear understanding of the purposes of technology education by key public school decision makers is essential for the continued development of the field. Oaks (1991) reported that state supervisors of technology education did not perceive local school administrators to be strong advocates of the technology education curriculum. Betts, Yuill, and Bray (1989) pointed out that, "the problem appears to be that those who make decisions affecting our program do not have a positive image of our program" (p.27). Selby (1988) indicated that outmoded ideas and misguided perceptions are the common enemy of all disciplines. Similarly, Dyrenfurth (1987) suggested that while technology education is considered an essential part of a quality education, there are often misinterpretations and stereo-typical misrepresentations associated with the field. In a study conducted by Wright (1991), he identified "a lack of support and understanding by administration" as the primary reason for teachers leaving the field of technology education. This lack of support may be linked to administrators holding the ill-conceived perception that technology education is a non-scholastic subject which does not promote student achievement. Wicklein (1993), in identifying critical issues and problems in technology education reported that "public relations" was identified as a serious concern and problem for the technology education field. He recommended that:

> Serious efforts should be established and implemented to communicate the purpose and scope of technology education to decision makers and interested people groups. All levels of technology educators and administrators need to be made aware of this serious issue/problem of public relations, positioning, and support gathering (p. 70).

Pucel (1993) suggested that technology educators must clearly communicate the field's unique contribution to the education of students. Similarly, Daugherty and Boser (1993) suggested that it is time for professionals within the technology education community to realize that there is an image problem and efforts must be made to take responsibility to inform and educate the public.

Educators in the technology education field must be able to address this need for public awareness as it specifically applies to local school decision makers. Through pre-service and in-service courses, teacher educators can provide instruction about methods that classroom teachers can use to establish a positive public perception of technology education. Dugger (1994) called on the membership within the profession to become "educational entrepreneurs" in the advancement of the field of technology education. He described the entrepreneurial tasks as three fold– "(1) committing to the development of technology education as a basic subject in all schools, (2) promoting the discipline, and (3) seeking others that share similar concerns related to the goals and missions of technology education" (p. 5). Teacher educators are in a particularly advantageous position to aid the empowerment of these goals as they prepare technology teachers to enter the field.

If the field of technology education is to achieve the status of a general education unit for all students in American schools the key will lie in aiding the decision makers in local schools to understand and appreciate the genuine contributions of technology education. Herschbach (1992) stated that: "Technology education has the potential to become an intellectual discipline and can claim to be more relevant than many of the older subjects" (p.14).

Administrators and guidance counselors are primarily responsible for enrollment patterns in secondary technology education programs. Therefore, it is imperative that the field identify the perceptions held by these decision makers and take action to influence the accuracy of these perceptions. Stereotypes and misperceptions of technology education must be dispelled at the grassroots level to achieve the goals of the profession.

Purpose

The purpose of this research was to examine whether there was agreement about selected characteristics of the technology education field among technology education professionals, school principals, and school counselors. Should differences be found, further analysis was planned to identify the nature of that disagreement. The efforts to integrate technology education into the secondary general education curriculum cannot be effectively implemented until there is clear understanding of the purpose of technology education by all members of the educational community.

Based on the purpose of this study, the following research questions were developed for investigation:

1. Is there a significant difference between technology teacher, principal, and counselor responses as measured by the *Characteristics of Technology Education Survey* (CTES).

2. Identify and interpret underlying structures of the CTES subscales. These subscales are were identified as curriculum content, instructional methodology, integration of subject matter, and environmental fit within the whole school curricula.

Methods

Participants

In selecting the sample for this study, two primary groups were identified, (1) exemplary technology education teachers and (2) the principals and counselors of the schools where the exemplary teachers taught technology education. Exemplary teachers of technology education were selected to establish base-line data regarding the perceived status of the technology education field. Although generalizability of the research results are limited with such a design, it was determined that by evaluating the best-case scenarios, the apex of general understanding achieved within the educational community could be determined. In addition to the exemplary technology teachers, principals and counselors of the schools where the teachers taught technology education were selected to compare perspectives of technology education. The principals and school counselors were considered key decision makers within the school and had significant impact on the success or failure of the technology education program. The principal had authority to support or refuse support to any instructional program within his/her school and the counselor was a significant force in determining which students would be enrolled in the technology education program. Individuals in both of these positions were viewed as playing important roles in the development of any technology education program and were viewed as key sources of information for purposes of this investigation.

The exemplary technology teachers identified in this study were selected through two national surveys targeted at state supervisors/specialists of technology education and university professors of technology education. By the use of a mailed questionnaire, representatives from all 50 states were surveyed. These representatives consisted of 70 university professors of technology education as well as 48 state supervisors/specialists of technology education from State Departments of

Education. The criteria used to select the exemplary technology teachers were based on the following teacher qualifications:

1. Currently teaching in a high quality well developed technology education program.
2. Minimum of 3 years teaching experience as a classroom teacher of technology education.
3. Creative developer of technology education curriculum materials.
4. Uses instructional methodologies that go beyond lecture and demonstration.
5. Perceived by peer technology teachers as a leader in technology education within their state.
6. Perceived by peer teachers within their school as innovative and a positive force.

A total of 210 exemplary technology teachers were identified through these surveys. Slightly more than one-half of these teachers (56%) were identified by teacher educators with the remaining exemplary teachers designated by supervisors of technology education (44%). The principals and school counselors portion of the sample was drawn from the same schools as the identified exemplary technology teachers. Therefore, 630 educators were selected to participate in this evaluation of technology education.

A total of 353 usable questionnaires were returned and included in the final research sample. In terms of professional affiliation, 42.2% of the respondents were identified as technology teachers (n=149), 29.7% were classified as principals (n=105), and the remaining 28.0% were designated as school counselors (n=99). The age distribution of the sample was predominately weighted with educators in the 41-50 age group (48.2%). The sample represented a very experienced group of professional educators with 37.4% indicating over 15 years of experience at their present school (n=132) and 68.6% of the respondents reporting over 15 years of experience in professional education (n=242). The sample was well educated with over three-fourths of all respondents (84.4%, n=298) holding graduate-level (master's or doctoral) degrees.

Instrumentation

Individuals selected for participation in this study were mailed the *Characteristics of Technology Education Survey* (CTES), a two-page (45 item) questionnaire designed to determine their perceptions of the characteristics of the technology education field of study. The self-report questionnaire was divided into five sections. The first section asked for demographic information including age, years of employment at the present school, years of experience, highest degree attained, and educational affiliation (e.g., technology teacher, principal, counselor). Information about educational affiliation was necessary to form the basis for a comparative analysis of the respondents' perceptions. The other information was used to provide descriptive statistics on the sample.

The remaining four sections of the survey represented the following subscales: (a) curriculum content characteristics, (b) methodological characteristics, (c) integration characteristics, and (d) environmental fit characteristics. These interrelated categories were based on a review of the literature and the content model for the study of technology as described in, *A Conceptual Framework for Technology Education* (Savage & Sterry, 1990). The curriculum content subscale sought to determine understandings of course content for technology education, while the methodological characteristics subscale was utilized to identify perceptions of the pedagogical methodologies used in teaching technology education. The third measure was used to distinguish perceptions of how subject matter integration occurred within the technology education curriculum (primarily mathematics, and science), and the fourth subscale represented the perceptions of the relationship of technology education with the total school environment.

The three groups of participants responded to identical statements on the CTES concerning the characteristics of technology education. The responses were made by marking each statement according to a five point Likert scale. Participant agreement or disagreement with each statement was coded on the Likert scale as follows: Strongly Disagree (1), Disagree (2), No Opinion (3), Agree (4), and Strongly Agree (5).

Pilot testing of the instrument was conducted to refine individual instrument items and to insure an accurate interpretation of the instrument instructions. Pilot test data was collected during a professional association workshop where the researchers had access to a group of practicing professional educators in teaching as well as in supervisory positions. A total of 14 respondents participated in the pilot test. Participants completed the instrument and provided written feedback regarding the clarity and validity of the instrument. Based on these evaluations two minor changes were made to instrument items and one specific clarification was made on the attached cover letter. The Cronbach Coefficient Alpha test was used to establish reliability and internal consistency for the questionnaire and resulted in a reliability index of .90 for the pilot study.

Design and Procedure

A total of 630 educators were selected as a sampling frame for this study; 210 exemplary technology teachers, 210 principals, and 210 school counselors. Each member of the sample was mailed a one-page cover letter, a questionnaire, and a pre-addressed postage paid envelope during the Fall of 1993. A follow-up mailing was made for those not responding to the initial survey request after a 3-week waiting period. Responses were collected for an additional 3-week period and then data collection ceased. This procedure resulted in a total of 371 questionnaires being returned for a response rate of 58.8%. Of the returned surveys, 18 were judged incomplete and unusable and were excluded from further analysis. Therefore, the remaining 353 questionnaires comprised the total usable data (56%). No response bias was detected from a comparison of early and late respondents. Whipple and Muffo (1982) demonstrated that late respondents are similar to nonrespondents in terms of questionnaire completion. Therefore, we concluded that the total number of questionnaires returned would be representative of the entire sample. The reliability index of the instrument based on the collected data as measured by the Cronbach Coefficient Alpha test was .94.

Results

An examination of the responses on the CTES revealed general agreement for individual items between each group of educators across the four subscales (curriculum content, methodology, integration, and environmental fit). Table 1 provides details of educator group responses to specific items on the instrument. The mean group score ranking of each statement was based on the following breakdown of the Likert scale: 1.000 to 1.499 - Strongly Disagree; 1.500 to 2.499 - Disagree; 2.500 to 3.499 - No Opinion/Neutral; 3.500 to 4.499 - Agree; and 4.500 to 5.000 - Strongly Agree. Although responses on the Likert scale appeared to be generally positive, further analysis was required to determine whether differences differed in any significant way.

Place Table 1 About Here

When instrument responses were grouped by CTES subscale, mean responses from the technology teacher group were higher than those of the principals and counselors on all dependent variables. Table 2 summarizes the descriptive statistics for subscale responses by exemplary technology teachers, principals, and school counselors.

Place Table 2 About Here

To answer the first research question and to determine whether mean responses for CTES subscales for the technology teachers, principals, and school guidance counselor groups differed significantly, a multivariate Analysis of Variance (MANOVA) was used. MANOVA is an inferential statistical procedure used to test simultaneously differences among groups on multiple dependent variables while controlling for Type I error (Haase & Ellis, 1987; Pedhauzer, 1982). An a *priori alpha* level of .05 was set for the Wilks' Lambda computed by the MANOVA used at this point in the study.

The omnibus test provided by the Wilks' Lambda with 8 and 694 degrees of freedom indicated that the multivariate *F*-value for group comparison on characteristics of technology education was 3.1255 (see Table 3). This value was significant at the .05 level so the first research question was answered in the affirmative and further analysis was conducted to determine the contribution of the dependent variables to the omnibus effects of the independent variable.

Place Table 3 About Here

A post hoc descriptive discriminant analysis (DDA) was used as a follow-up on significant MANOVA results (Huberty & Wisenbaker, 1991). When used as a follow-up to a MANOVA, DDA affords three procedural benefits. The DDA is useful to examine the nature of the significant differences, it controls for experiment-wise error common to analyses where multiple dependent variables are used, and it is useful where there are high interscale correlations (Bray & Maxwell, 1982; Chartrand & Camp, 1991; Haase & Ellis, 1987).

Use of the DDA afforded an examination of the outcome variables that represented the underlying structure of each subscale. Additionally, when overall group differences are considered, the relative contribution of dependent variables to the group separation could be observed (Huberty & Wisenbaker, 1991). Using the DDA, all instrument subscales were considered simultaneously, allowing the full range of variable relationships to be examined. This resulted in a thorough accounting of the complexity of the technology education characteristics being measured by the CTES subscales. Table 4 presents the statistical results of these analyses.

Insert Table 4 about here.

A plot of the canonical discriminant functions suggested that technology teachers were differentiated from principals and guidance counselors. The general approach used in this study to determine the importance of each of the dependent variables as a contributor to the group differences was to examine the impact of removing a variable on the overall results. If deleting a variable had little impact, it was concluded that the variable was relatively unimportant. If the converse was true when a variable was deleted, that variable was determined to be of greater importance to the outcome (Huberty & Barton, 1989). Using this procedure, the rank ordering of dependent variables placed curriculum content characteristics first and then integration of academics, perception of technology education, and teaching methodology. For the purpose of identifying overall group differences, an examination of the F-to-remove values (see Table 4) indicated that curriculum content in technology education was primarily responsible for the separation of technology teacher perceptions from those held by the principals and counselors.

Discussion

At this juncture, it is appropriate that the reader be apprised of the inherent limitations of this research. Specifically, the use of self-reporting measures and the absence of random selection restrict the degree to which these results can be generalized. Further, Huberty and Wisenbaker (1991), caution against overgeneralizing beyond the data when ordering overall group differences using DDA. When thought of as an initial investigation, however, these results do provide interesting insight into the perceptions of decision makers regarding technology education. Further, this study does establish a base of information while providing a direction for further research.

The examination of data in this study revealed overall differences between exemplary technology teachers and the principals and counselors of the schools where the exemplary teachers taught technology education. Technology teachers differed significantly in their perceptions of the curriculum content in technology education. Additionally, the need for integration of academics, environmental fit, and teaching methodology used in technology education, while not statistically significant at the a priori level, were ranked with respect to their contribution to the group differences observed. The remainder of this section examines these differences.

Curriculum Content Characteristics

Differences in conceptions of curriculum content between the technology teachers and the principals and counselors might be an expected conclusion. The classroom teachers of technology education were more knowledgeable about their curriculum than other educators, so the difference in perceptions about curriculum content was due in part to the greater awareness of curriculum issues in technology education by the teachers and lesser awareness by the associated staff. Another likely factor being identified here is more problematic--that the new focus of technology education curriculum has not been fully recognized by those outside the field.

To the extent that school professionals who are instrumental to the vitality of technology education programs do not fully understand what these programs do, support for student enrollment and program expansion may be limited. Bear in mind that the technology teachers under examination in this study were distinguished as being exemplary in their field. The programs these teachers were responsible for had often generated publicity and attracted public attention or they would not have been selected. Even so, additional work was needed to promote awareness of curriculum content.

Environmental Fit Characteristics

The CTES items regarding environmental fit were focused on the relationship of technology education to other components of the school program. Issues such as special education and tracking were included within the meaning of this variable. Differences in the perceptions between technology teachers, principals and counselors on these characteristics were quite small although the mean for technology teachers was slightly higher. If anything, these items likely were related to the greater understanding of possibilities for technology education programs by teachers in that field. As efforts are undertaken to better communicate the curriculum content of technology education and collaborative efforts are initiated to achieve integration of academic content, greater awareness of these possibilities will be facilitated and any gap in understanding of these possibilities should be narrowed.

Methodological Characteristics

The observations concerning methodological characteristics yielded by this study were similar to those in the curriculum characteristics section. The classroom teachers of technology education held a higher perception of the instructional methodologies used to teach technology education. Conclusions that may be drawn from these results are similar in nature to those inferred from the curriculum content characteristics. One perspective is that methodological characteristics used in technology education classes are more accurately perceived by the actual instructors conducting the teaching, while a less than precise perspective of the instructional methodologies were held by the associated staff. However, another applicable conclusion for this result may be that associated principals and counselors perceived the instructional methods used in technology education programs to be inconsistent with traditional methods of instruction.

The instructional approaches being implemented in technology education programs could appear somewhat unconventional to the uninformed. Events such as taking a group of students to an open second floor window to allow them to drop an egg package onto a concrete surface below may appear to be out-of-sinc with the back-to-basics movement some are demanding. In addition, the modular technology curriculum with self contained learning activities, has required a unique change in instructional methodologies. It is important for technology teachers to make every effort to communicate the goals and learning objectives being fulfilled through methodological approaches which might be misunderstood from outside observation.

Integration Characteristics

The integration of subject specific instructional topics with technology education has been gaining support in recent years (Bottoms, Presson, & Johnson, 1992; LaPorte & Sanders, 1993; Roy, 1990; Schell & Wicklein, 1993; Senge, 1990: Wicklein & Schell, 1993). The CTES used in this study included a measure related to the need for integrating technology education with other school subjects. Again the classroom teachers of technology education perceived this need at a higher level than did the associated principals and school counselors. A part of this might have been the newness of this concept, however, these results may also be indicative of misgivings on behalf of the associated staff regarding the ability of technology teachers to support or adequately integrate academic subject matter.

In order to implement integration of subject matter at meaningful levels, school decision makers must be convinced that this approach to learning is valuable and that the technology education program can provide appropriate levels of instruction in these areas. In some instances, refusing to allow credit for certain graduation requirements can essentially block more significant efforts at integration represented by courses such as applied physics. Support by associated principals and guidance counselors is an essential element for many of the more extensive integration efforts.

Findings of this study were generally consistent with prior research involving associated educators perceptions of technology education characteristics (Daugherty & Wicklein, 1993). The overall results indicated that viewpoints differ across the school environment about what technology education is and how it is taught. However, we must not assume that statistical significance is the same as practical significance. When we examine the analysis with an eye for realism we see that although there was a mathematical significant difference the overall differences were small and the perceptions among the educator groups indicated a rather high evaluation of the various characteristic topics of technology education. With this in mind, the professionals in the field of technology education should be encouraged by the evidence that differences in perception are not polarized. Nevertheless, continued efforts to better communicate the nature of technology education content (curriculum), how it is delivering that content (methodology), and how technology education fits within the general education curriculum (integration) must be a priority for the field. By identifying the currently held perceptions of administrators and guidance counselors, technology education teachers, supervisors, teacher educators, and association representatives have been provided with an initiation point from which to take concerted action toward positioning technology education as an essential educational building block for all students participating in the public school curriculum.

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Table 1

Perceived Characteristics of Technology Education by Educator Group and Instrument Items

Item #	Item Statement	Overall Mean	SD	Teachers Mean	SD	Principals Mean	SD	Counselors Mean	SD
Curriculum Content									
6	Organized set of concepts, processes, & systems	3.92	1.13	4.00	1.19	3.78	1.16	3.93	0.97
7	Knowledge about technological developments	4.39	0.64	4.53	0.61	4.23	0.64	4.36	0.66
8	Portion of content based on biological organizer	3.45	0.98	3.55	1.03	3.48	0.98	3.27	0.87
9	Portion of content based on information transfer	4.53	0.63	4.63	0.57	4.42	0.67	4.49	0.66
10	Portion of content based on modifying materials	4.32	0.73	4.49	0.70	4.23	0.76	4.17	0.71
11	Portion of content based on study of transportation	4.35	0.73	4.55	0.58	4.25	0.78	4.17	0.80
12	Students to develop insights in use & appl. of tech.	4.68	0.54	4.77	0.47	4.58	0.67	4.65	0.47
13	Curriculum allows for appl. of tools, mater., & mach.	4.66	0.55	4.74	0.48	4.57	0.66	4.64	0.50
Methodology									
14	Emphasis on solving problems	4.52	0.64	4.67	0.48	4.41	0.75	4.40	0.67
15	Exploratory activities (modeling production)	4.58	0.59	4.65	0.53	4.54	0.70	4.54	0.54
16	Instruction is goal oriented	4.39	0.67	4.38	0.70	4.34	0.75	4.44	0.53
17	Cooperative learning encouraged	4.67	0.55	4.75	0.44	4.60	0.64	4.61	0.58
18	Oral presentations emphasized	3.80	0.98	3.95	0.97	3.80	1.01	3.57	0.95
19	Cognitive strategies clearly developed	4.06	0.82	4.05	0.86	4.01	0.88	4.14	0.70
20	Broad range of assessment strategies used	4.44	0.68	4.53	0.64	4.39	0.71	4.37	0.70
21	Students encouraged to discuss concepts & issues	4.29	0.70	4.39	0.66	4.14	0.83	4.30	0.59
22	Students encouraged to learn about underlying issues	4.00	0.85	4.16	0.84	3.94	0.83	3.81	0.84
23	Modular curriculum should be dominate	3.56	1.12	3.40	1.30	3.74	0.99	3.62	0.91
24	Lab activities reinforces abstract concepts	4.57	0.61	4.63	0.52	4.48	0.77	4.58	0.53
25	Instr. aids in development of creativity & self image	4.58	0.56	4.68	0.47	4.53	0.66	4.48	0.54
26	Instr. aids in development of student problem solving	4.63	0.56	4.78	0.42	4.58	0.69	4.47	0.54
27	Instr. aids in development of life long learning goals	4.67	0.55	4.83	0.37	4.56	0.71	4.54	0.52
Integration									
28	TE should emphasize interdisciplinary activities	4.61	0.61	4.73	0.47	4.53	0.74	4.50	0.61
29	TE lessons should reinforce other school subjects	4.21	0.82	4.40	0.71	4.06	0.90	4.10	0.82
30	Students apply other subjects in Technology Education	4.58	0.60	4.71	0.49	4.47	0.73	4.50	0.56
31	TE teachers connect science and mathematics content	4.54	0.59	4.69	0.47	4.45	0.63	4.41	0.67
32	TE applies concepts of other subjects	4.55	0.60	4.73	0.51	4.40	0.68	4.45	0.55
33	TE should be available to all students	4.59	0.66	4.74	0.54	4.47	0.73	4.58	0.70
34	TE is applied science	4.30	0.85	4.21	1.00	4.39	0.76	4.35	0.70
35	TE reflects content of business and industry	4.37	0.70	4.41	0.63	4.26	0.83	4.42	0.64
36	TE is guided by technological literacy needs	4.17	0.76	4.24	0.74	4.16	0.75	4.07	0.80
Environmental Fit									
37	TE should be focused on needs of special ed. students	1.96	0.99	1.90	0.98	2.08	1.05	1.91	0.92
38	TE teachers should form interdisciplinary committees	4.19	0.74	4.18	0.76	4.21	0.75	4.17	0.68
39	TE programs should reflect interdisciplinary concepts	4.35	0.62	4.40	0.59	4.33	0.71	4.32	0.58
40	TE leaders should encourage subject matter integration	4.26	0.75	4.43	0.67	4.24	0.76	4.04	0.79
41	TE to focus on the non-college bound student	1.87	1.00	1.69	0.89	2.00	1.10	2.01	1.02
42	Research to be conducted on integration needs in TE	3.99	0.86	4.00	0.91	4.05	0.87	3.89	0.79
43	TE to develop strategies for overcoming stereotypes	4.43	0.74	4.58	0.58	4.24	0.88	4.39	0.74
44	TE should be available for all students	4.73	0.56	4.88	0.31	4.59	0.75	4.65	0.55
45	TE should focus on college-prep needs of students	1.91	0.93	1.94	1.00	1.99	0.96	1.79	0.76

Table 2.
Mean CTES Subscale Scores and Standard Deviations for Respondents Classified by Educator Group.

		Curriculum		Methodology		Integration		Environmental Fit	
Educator Group	n[a]	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Technology Teachers	149	35.21	3.50	61.62	5.29	40.85	3.52	31.95	3.56
Principals	105	33.58	4.19	60.05	7.45	39.08	5.43	31.77	3.87
Counselors	99	33.59	3.49	59.72	6.07	39.15	4.29	31.04	3.73

[a] A total of 353 educators responded to this research

Table 3.

Multivariate Analysis of Variance for Mean Scores of Respondents Classified by Educator Group.

	Wilks' Lambda	df	F	PR>F
Educator Group	0.9316	8	3.1255*	0.0018

*$p < .05$.

Table 4.

Results of Descriptive Discriminant Analysis for Educator Group and CTES Subscale.

CTES Subscale	F-to-Remove Values	Prob > F
Curriculum	4.232	0.0153
Methodology	0.989	0.3729
Integration	2.841	0.0597
Environmental Fit	1.650	0.1935

IDENTIFYING PRIORITIES FOR TECH PREP TEACHER EDUCATION

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INTRODUCTION

The concept of Tech Prep began over two decades ago when educators at the federal level and in selected states contemplated educational reform linked to vocational education in high schools and community colleges (Dornsife & Bragg, 1992). It gained national attention in Parnell's *The Neglected Majority* in 1985, and was formalized in Title III of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, the Tech Prep Education act, in July of 1991. Since that time, considerable effort has been spent on the planning and development of Tech Prep programs, mostly at the secondary level.

Higher education has been at best a bit player in the Tech Prep movement up to now. As program development and implementation continue at the local level, intensive teacher inservice is usually required. The perception is growing among practitioners that teacher education institutions and professionals need to become more actively involved in Tech Prep reform. In response to this need, the University Council for Vocational Education in Illinois comissioned a needs assessment. Its purpose was to determine the subject area content and pedagogical preparation needs and priorities of prospective Tech Prep teachers. Four distinct research and synthesis activities were undertaken, the objectives of which were:

1. To identify desirable characteristics and skills of a "tech prep teacher"
2. To determine how those characteristics and skills should be achieved

Each of these activities were conducted with an eye toward the specific implications for Tech Prep teacher preparation and staff development. Results were then analyzed collectively to develop broad strategies for Tech Prep teacher preparation.

Conceptual Base

Parnell believed Tech Prep should "blend the liberal arts with the practical arts without diluting the time-honored baccalaureate degree/college prep track" (1985, p. 140). Following in Parnell's foot prints, others have argued more recently for an educational approach that can begin to address the needs of a large proportion of youth that are not well served by the current process of American schooling (W. L. Grant Commission on Work, Family, and Citizenship, 1988; Commission on the Skills of the American Workforce (1990).

Among the most compelling of the contemporary arguments for Tech Prep involves the shortcomings of traditional instructional approaches. Findings from cognitive psychology about how individuals learn best lend support to a Tech Prep approach. By providing a real-world context for learning, Tech Prep can engage students in learning a vast array of skills and knowledges, particularly those traditionally thought to belong in academic subjects (e.g., math, English, science). (For additional reading that supports this argument, we refer you to recent issues on educational reform in the *Educational Leadership* journal.)

Given the federally-mandated components of Tech Prep, many unique but highly related processes define the Tech Prep approach. Bragg (1992) identified, among others, the following processes as the basis for the Tech Prep approach:

- Curriculum integration - blending or merging of subject matter to create more "authentic" learning experiences, specifically the blending of academic subject matter (i.e., math, science, communications, social studies) with occupational/technical content to create realistic learning opportunities.
- Career awareness, exploration, and development - attention paid to the need to structure the way youth learn about and explore careers. This may occur through structured career education classes, through work-based learning experiences such as youth apprenticeships, or through in-school experiences structured through curriculum organized around career clusters or school academies.
- Organizational and individual collaboration - created shared responsibility for education among all stakeholders (e.g., educators, students, parents, employers, community agencies) to increase ownership for improved education. An outgrowth of this view of education includes involving parents, employers, and other citizens as mentors and teachers for students. There is an active and on-going exchange of information to enhance the student's learning experiences.
- Shared leadership - cooperation among teachers, administrators, community representatives, parents, students, and others in decision making about what education should mean and how it should be delivered to best meet the needs of today's students.

Viewed as a whole, Tech Prep can viewed as having a number of preferred outcomes of significance to students, educational institutions, and the community at large. These outcomes include:

- Enhanced learning and academic progress for students - by creating more relevant, active, and integrated educational opportunities
- Increased faculty involvement - by empowering faculty to become actively involved in decision making and curriculum development

- Increased efficiency in the total education system - by strengthening administrative and curricular efforts across all levels of education
- Improved work force preparation - by creating for students a more academically- and technically-challenging pathway to careers
- America's youth for citizenship, further education, and productive employment
- Increased community confidence in public education - by demonstrating accountability and value in public education

Methods of Inquiry

Four separate activities comprised this overall needs assessment. The procedures for each are described individually below.

Activity 1: Review and Synthesis of Research on Reform Initiatives in Science, Mathematics and English: Reports and publications of extant literature were reviewed. Major findings were synthesized and compared to Federally-mandated components and identified critical processes of Tech Prep.

Activity 2: Survey of School Administrators: Twelve secondary school administrators with responsibility for leading a Tech Prep initiative in their schools were surveyed. They were asked eight open-ended questions that addressed major performance or competence needs of tech prep teachers. Results were gathered as narrative statements and grouped by major themes.

Activity 3: Focus Group Interview With School Teachers: A focus group interview was conducted with a selected group of secondary Tech Prep practitioners. Subject areas represented by the group were: English/communications, business, physical science, technology, mathematics, and administration. The participants were asked questions about their experiences in Tech Prep programs and the quality of their preparation to be a "tech prep" teacher. The discussion was recorded both on audio tape and with observer notes. Transcriptions of the tapes were content analyzed by tallying how often specific concepts, terms or issues recurred during the discussion.

Activity 4: Review of Stakeholder Groups' Perceptions Data: A study was conducted in the spring of 1992 to identify and compare stakeholder groups' perceptions of Tech Prep via a concept mapping procedure. Data from the 1992 study were re-analyzed to identify issues and implications for teacher preparation.

Results of all of these activities were reviewed by the authors and overarching implications for Tech Prep teacher preparation were developed.

Findings

Identification of Reforms in Science, Mathematics and English

Integration of vocational and academic subject matter is a central tenet of Tech Prep, therefore, a review of recent reform literature in the areas of Science, Mathematics and English/ Language Arts was conducted to determine how reforms in those areas parallel the concepts and critical processes of Tech Prep.

Recent reforms in science have focused on content and context. One significant reform in the content area is an effort to identify and utilize cross-disciplinary connections to achieve content goals. On the context side, Science, Technology and Society (STS) seeks to ground science content instruction in multidisciplinary, real-world, issue-oriented contexts. The use of the discovery process is central to this approach.

In mathematics, the concept of teaching and learning in context is again prominent in reform literature. The National Council of Teachers of Mathematics (NCTM) has recommended allowing students to learn through induction, focusing instruction around guided inquiry, and having students apply mathematics skills in realistic situations. Researchers have found that, using these approaches, all students can learn mathematics (Usiskin, 1993).

Changing how skills are taught and learned is also the focus of recent reform in English. The Standards Project for English/Language Arts lists the following among recommendations for secondary teaching practices: (1) Provide multiple opportunities for students to work together...and allowing teachers to act as facilitators; (2) Promote writing by providing opportunities for students to write for a wide variety of purposes; (3) Provide multiple opportunities for students to use the arts of language rather than to memorize rules about them.

Survey of Administrators

The people who have responsibility for initiating and facilitating the implementation of Tech Prep -- the administrators -- were viewed as important stakeholders in the preparation of Tech Prep personnel. Consequently, a survey was conducted to foster a better understanding of administrator perceptions and needs as they pertain to Tech Prep teachers.

Twelve secondary school administrators with experience in leading local Tech Prep initiatives were surveyed by mail. The administrators responded to eight open-ended questions which addressed major performance or competence needs of Tech Prep teachers. An analysis of results of the survey indicate that the following are important characteristics which Tech Prep teachers should possess:

Personal and Professional Characteristics

- Innovation and creativity
- Respect and value for all disciplines
- Commitment to lifelong learning
- Flexibility, adaptability, especially with regard to change
- Ability to work with secondary and post secondary faculty and staff to develop and coordinate Tech Prep programs
- Effective team participation, team building, leadership, participation
- Ability to communicate (to sell) with outside entities about Tech Prep

Content Knowledge and Skill

- Competence in multiple computer applications, more than surface knowledge, real competency
- Ability to teach, model, demonstrate technological expertise
- Interdisciplinary knowledge, competency in related fields
- Thorough understanding of the conceptual framework of Tech Prep

Pedagogical Skills and Abilities

- Knowledge of a variety of teaching methods based on learning theory
- Competence in using various teaching methods to appeal to a variety of learning styles
- Objective-based focus
- Ability to use various assessment strategies/systems
- Experience in design, development, and use of various media, instructional technology
- Communication skills, both writing and verbal
- Problem-solving skills, group decision making
- Ability to design applied curriculum, relevant to students, and realistic

Requisite Experience

- Internships in business and industry
- Experience in business and industry beyond educational roles
- On-the-job (work) experience in vocational education area

Focus Group with Tech Prep Teachers

In early 1993 a focus group interview was conducted with a selected group of secondary Tech Prep practitioners. Subject areas represented by the group were: English/communications, business, physical science, technology, mathematics, and administration. The purpose of this interview was to identify both general and specific elements which should be included in a Tech Prep teacher preparation or inservice staff development curriculum. The general questions which were used to guide the interview were:

- What is your specific role in your school's Tech Prep program?
- Why did you become involved in Tech Prep?
- Based on your experiences, how would you define Tech Prep?
- What is different about "tech prep teaching?"
- In what areas do you feel you were unprepared to teach Tech Prep?
- What would you look for in a Tech Prep teacher?

Analysis of the interview transcript revealed that the group's comments centered around three predominant themes: teaching techniques, content, and general (stakeholder) insights about teaching and teachers.

Teaching Techniques

- use of cooperative learning strategies
- use of experiential learning techniques
- willingness to relinquish total control of the learning environment
- collaborative and teaming approaches
- vocational/academic integration
- opportunity for prospective teachers to experience these methods

Content

- students must see present or future applications
- teachers need workplace experience
- emphasize affective domain
- communications skills
- computer skills

General Insights (characteristics needed by Tech Prep teachers)

- willingness to take risks
- energetic
- experienced in the workplace
- adaptability
- mentoring

Concept Mapping With Tech Prep Stakeholders

The purpose of this study was to provide a clear operational description of Tech Prep in Illinois as perceived by those who were involved with Tech Prep at various levels. This was accomplished through the use of a concept mapping procedure with administrators, teachers, counselors, state staff, and employers as participant/respondents. A multi-stage process involving mail survey, multidimensional scaling analysis, and group interpretation was used to identify components of Tech Prep programs and rate the relative importance of the components.

The following, listed in order of priority, were identified as important major elements of Tech Prep: Outcomes, Planning and Support, External Involvement and Support, Articulation/Integration, Benefits, Enrollment Incentives, Staff Development, and Populations Served.

Throughout these major component areas, several themes emerged:

- communication among all involved in planning and delivering Tech Prep
- collaborative relationships
- expanding the repertoire of teaching techniques
- application of academic knowledge and skills
- curriculum grounded in mathematics, science and communications

Importantly, the overriding theme which encompasses several clusters is *collaboration*: between educators and employers and between educators and educators, collaboration for support, for developing articulation, for program delivery, and for staff development.

Synthesis of Findings

The first objective of this research activity was to identify desirable characteristics and skills of a "tech prep teacher." In response to this objective, several themes representing skills or experiences a tech prep teacher ought to have emerged from the four studies. These themes are explained briefly below:

Teaching Through Application: "Learning in context" is a reform approach which applies to several disciplines. Tech Prep teachers must be able to use methodologies which allow students to learn needed skills in the context of the workplace. Thus, the teachers must be able to apply their subject matter specialty in workplace situations. Prospective Tech Prep teachers must have opportunity to learn and experience this approach to instructional design and delivery.

Student Centered/Inquiry Based Instruction: While teaching through application addresses differences in student learning styles, using a student centered/inquiry based teaching aproach enhances the students' ability to work cooperatively or independently to think critically and to solve problems they encounter in various situations. This approach emulates the workplace. Prospective teachers need to be taught using this approach, have it modeled for them, and practice its use.

These two themes represent quite a departure from "traditional" teaching methods. Thus, they represent great potential for reform and are very threatening at the same time. They require teachers to act more as facilitators, relinquishing some of the total control over the learning environment which they have exercised in the past.

Vocational/Academic Integration: Tech Prep provides a vehicle by which academic content may be linked to occupational applications. Prospective teachers should know about the background and progress of integration, but most particularly the methods for implementing it (both in terms of curriculum development and teaching methodology). Teacher educators also need to address broader policy issues such as interdisciplinary teacher certification and the use of credit from integrated or applied courses to meet university admission requirements.

Collaboration: Tech Prep, by its very structure, requires extensive interagency collaboration. Collaboration is also essential to facilitate vocational/academic integration. Again, this represents a departure from the "traditional" approach to teaching and teacher preparation. Teachers need to understand the roles played by various Tech Prep stakeholders, not just their specific role. Tech Prep teacher preparation must be interdisciplinary.

Real World Experience: Teachers must have an experience-based frame of reference in order to use applications-based teaching methodologies. How should they gain the necessary experience? Programs such as Illinois' Vocational Instruction Practicum (VIP) currently provide opportunities for practicing teachers to gain workplace experience. Alternative preparation and certification approaches are being explored for "second career" teachers who already have work experience. Clearly, this issue has implications for both candidate selection and subsequent preparation.

Discussion

The second objective of these research activities was to determine how desirable tech prep teacher characteristics and skills should be achieved. Though short-term strategies are just that and will not sustain the meaningful reform potential of Tech Prep, the following are presented as examplea of how teacher education programs can demonstrate to the field commitment to reform and initiate longer-term visions.

In order to facilitate applications-based teaching, teachers could be trained to use and/or adapt commercial applications-based curriculum materials either as stand alone courses or to supplement self-developed courses. Further, in-field teachers could be assisted in converting their existing courses of study, where appropriate, to applications-based instruction via inservice workshops, summer courses, and the like.

Preservice field experiences should be of longer duration and should include experiences with teachers disciplines other than (but related to) that of the teacher candidate. Mentor-teachers should be identified who exemplify the desired characteristics of Tech Prep teachers identified in this study. Student teaching and other early field experiences should be intensive and very closely supervised.

Student-centered, inquiry-based teaching methodologies should become the standard for Tech Prep teacher preparation. One option is to adapt a specific, well-defined, well-researched student-centered teaching methodology to other disciplines.

Preservice teacher education programs should contain a workplace experience component. This could either be a course in the required sequence or a requirement which teacher candidates meet individually. For in-field teachers, summer work experiences could be combined with university instruction and graduate credit awarded. Also, Masters degree/certification programs should be developed and other alternatives explored to facilitate efficient preparation and certification of second career teacher candidates.

Application and review processes for teacher candidates should be modified to allow candidates to emphasize, and place greater evaluative weight on, related work experience.

New courses should be developed, or existing courses modified, to include content such as the change process and facilitating change in an institution, developing teams and working collaboratively, using cooperative learning techniques, and developing instruction to address differences in learning styles.

Vocational/technical and academic subject area teacher educators should cooperatively develop interdisciplinary courses which demonstrate the connections and applications of the content and skills.

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THE KNOWLEDGE AND PERCEPTIONS OF MICHIGAN SECONDARY VOCATIONAL EDUCATION ADMINISTRATORS TOWARD VOCATIONAL STUDENT ORGANIZATIONS

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THE KNOWLEDGE AND PERCEPTIONS OF MICHIGAN SECONDARY VOCATIONAL EDUCATION ADMINISTRATORS TOWARD VOCATIONAL STUDENT ORGANIZATIONS

Introduction

Declining numbers of high school students, decreasing tax bases, and increased emphasis on educational academics have caused enrollments in both vocational programs and vocational student organizations (VSOs) to dwindle. The 1980's brought decreased memberships for all of the VSOs except the newest clubs, Technology Student Association (TSA) and Health Occupations Students of America (HOSA). The Future Homemakers of America (FHA) have lost 13,063 members since 1988, FFA was on a downward trend until 1992, when an intensive marketing trend increased membership by 18,000. The Vocational Industrial Clubs of America (VICA) are down 28,000 students from 1987, the Business Professional of America have dropped over 25,000 members since 1981 and the Distributive Education Clubs of America (DECA) have 6,845 fewer members since 1989 (Hannah, 1993). The ability of vocational education and VSOs to adapt to these and other societal pressures will likely determine their future.

Although socioeconomic changes are creating stress on vocational education and VSOs, societal changes have also emphasized the need for programs that can offer workplace skills and personal development. Brodhead (1991) reported that poorly educated workers cost U.S. business and industry $25 billion a year. The National Association of State Councils on Vocational Education (NASCVE, 1972) described miseducated people as a problem to themselves, industry and posing a threat to the economic prosperity on which our nation depends. Vocational education and VSOs are in an excellent position to demonstrate their ability to develop a work force capable of critical thinking, problem solving, teamwork and leadership skills, enabling them to succeed in the workplace. Blackstone (1969), lists cooperation, leadership, confidence and training for useful citizenship, as common goals for vocational student organizations. In addition, the goals of interpersonal development and workplace skills are further addressed by each organization.

The National Advisory Council on Vocational Education (1984), credits VSOs with having done more to close the relevance gap between education and the community than any other movement on the scene. Yet, despite the fact that youth organizations have been a vital part of vocational education for decades, they are not used to their fullest potential in improving the quality of instruction. The decision to put VSOs into more productive use is that of the local program instructor with the support of the local administration.

More efficient VSOs require adequate funding of both the vocational program and the vocational student organization. Magill and Leising (1990) found that the principal, with the aid of the vocational director, superintendent and the school board, determines changes in funding, curriculum, implementation and, ultimately, the continuation of vocational programs. Therefore, perceptions of VSOs by those at the decision making level in vocational education are important in planning the future of the organizations. In an extensive review of literature, no studies were found that investigated relationships of administrators and funding of VSOs at the state association level.

This comprehensive review of literature was used to develop conceptual framework for the study. The framework in Figure 1 shows how administrator characteristics, community characteristics, funding and school characteristics relate to administrator knowledge and attitudes.

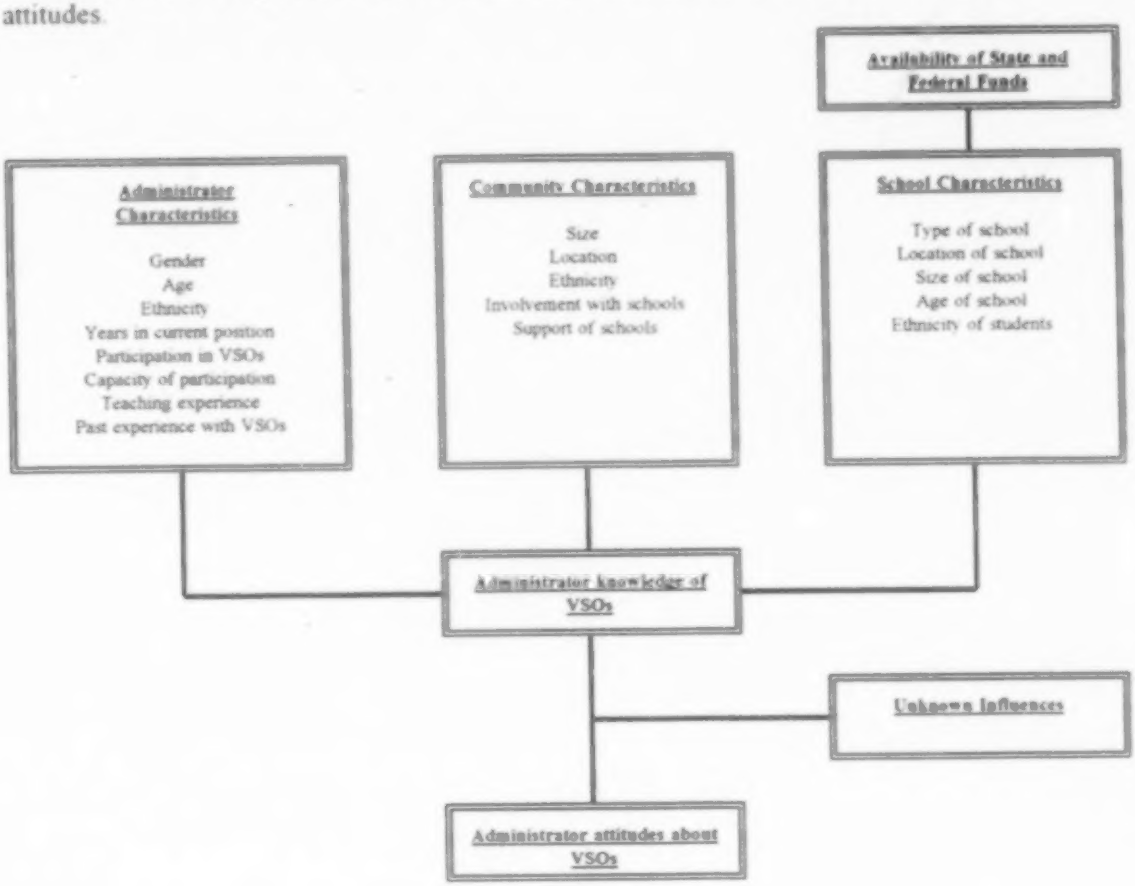

Figure 1. Conceptual Framework

This study was developed as an effort to assist VSO state level leaders plan for the future of their organizations.

Purpose and Objectives

The purpose of this research was to determine the knowledge and attitudes of Michigan High School Administrators about vocational student organizations. Specific objectives of the study were to:

1. Determine differences among administrators' knowledge of vocational student organizations and administrator and school characteristics.

2. Determine differences among administrators' attitudes of vocational student organizations and administrator and school characteristics.

3. Determine differences among administrators' attitudes toward funding state level vocational student organizations and school characteristics.

Hypothesis and Research Questions

Research Hypothesis

The following research hypothesis will be used in this study:

The hypothesis test relating to Objective #1 was as follows:

H_0 There will be no significant difference in administrator knowledge about VSOs when compared with administrator and school characteristics.

H_1 There will be significant difference in administrator knowledge about VSOs when compared with administrator and school characteristics.

For testing purposes, the hypothesis was diagrammed as follows,

$H_0 \quad u_1 = u_2$

$H_1 \quad u_1 \neq u_2$

The hypothesis test relating to Objective #2 was as follows:

H_0 There will be no significant attitudinal differences between administrators about VSOs when compared to administrator and school characteristics.

H_1 There will be significant attitudinal differences between administrators about VSOs when compared with administrator and school characteristics.

For testing purposes, the hypothesis was diagrammed as follows,

$H_0 \quad u_1 = u_2$

$H_1 \quad u_1 \neq u_2$

Research Question

1. What type of administrator will be most willing to fund VSOs in the future.

Procedures

The population of this study was all Michigan secondary principals in schools with vocational education. Sampling and selection error were controlled by conducting a census of all principals in schools with vocational programs. The total population was 530 high school principals. Frame and selection error for this study was controlled by cross-checking a Michigan Department of Education list of administrators with the 1993 Michigan Education Directory and with staff in the Michigan Department of Education.

The study utilized descriptive survey research. A written questionnaire was selected as the measurement instrument. The instrument was developed by a panel of experts representing professionals in vocational student organizations, secondary education, and vocational education. Questions were developed to obtain information pertaining to each objective. The instrument was checked for face validity by a field test of professionals in agriscience and vocational education. The content validity of the instrument was verified by a panel of experts familiar with agriscience, vocational education, youth organizations and research. Changes were made to improve clarity and reduce ambiguity. The instrument was tested for reliability post hoc on the returned questionnaires, limited to the Likert scale questions. Reliability was calculated on the Likert scale questions using SPSS for windows, the Cronbach's alpha coefficient was .85.

Data was collected by mail, using the Total Design Method (Dillman, 1978); a total of three complete mailings were sent and a post card reminder. The response rate for the entire study was 451 responses or 86%. The survey data from early and late respondents were compared. No significant differences between early and late respondents were detected using T-tests, therefore the results can be generalized to the whole population (Miller & Smith, 1983).

Analysis of Data

The survey instrument was analyzed using the Statistical Package for the Social Sciences (SPSS/PC for windows). The data was analyzed using frequencies, means, and standard deviations. Statistical tests included T-tests, ANOVA and correlations.

Results

In the final analysis for objective 1, a T-test determined that administrators who participated in VSOs were significantly more knowledgeable about VSOs than those that had not participated in VSOs. Administrator knowledge about VSOs was determined by combining all the knowledge questions into a new variable on knowledge. There were seven knowledge questions, therefore the knowledge variable score ranged from 0 - 7. Table 1 shows the means and standard deviation of the two groups. Table 2 contains the two tailed probability that shows the significant difference. Therefore, the null hypothesis is rejected and the alternative hypothesis is tenable.

Table 1

Administrators participation in VSOs and their knowledge about VSOs.

Administrators Participation in VSOs	N	Mean	Standard Deviation
No	253	5.0	1.82
Yes	164	6.0	1.25

Table 2

T-test for Administrators participation in VSOs and their knowledge about VSOs.

Variances	T value	2-tail Significance
Unequal	-6.62	.000

F=26.64 P=.000

A T-test was performed to determine if differences existed between gender of the administrators and their knowledge about VSOs. The T-test found that there were no significant differences between male and female administrators knowledge about VSOs.

An analysis of variance was performed to determine if differences existed between administrators representing different types of schools and knowledge about VSOs. The ANOVA found that administrators from career/technical schools had a significantly higher mean score on knowledge of VSOs than administrators from comprehensive high schools. Table 3 contains ANOVA results. Table 4 shows the results of the Tukey test which shows the significant difference. Therefore, the null hypothesis is rejected and the alternative hypothesis is deemed tenable.

Table 3

Analysis of variance for knowledge of administrators and the type of school they represent.

Source of Variation	Mean Square	D.F.	F	Significance of F
Between Groups	40.9041	2	15.646	<.001
Within Groups	2.6973	402		
Total		404		

* p<.05

Table 4

Tukey test for significant differences between types of schools administrators represent and their knowledge about VSOs.

Mean	Type of School	N	Comprehensive	Other	Career/T
5.21	Comprehensive	357			
5.56	Other	17			
6.64	Career/Technical	48	*		

* p<.05

Analysis of Variance tests were conducted for administrators knowledge about VSOs and the location of the school they represented. No significant differences were found.

In the analysis for objective 2 , a T-test was performed to determine if differences existed between gender of the administrator and their attitude about VSOs. The T-test found that female administrators had a significantly more positive attitude about VSOs than male administrators. Administrators attitude scores were computed by combining all the attitude questions into a new variable on attitude. There were six questions on attitude about VSOs, therefore the scores on the attitude variable ranged from 0 - 6. Table 5 shows the mean and standard deviation of the two groups and Table 6 contains the 2-tailed probability that shows the significant difference. Therefore the null hypothesis is rejected and the alternative hypothesis is tenable.

Table 5

Gender and administrator attitudes about VSOs.

Gender	N	Mean	Standard Deviation
Males	362	3.8	.610
Females	61	4.1	.668

Table 6

T-test for gender and administrator attitudes about VSOs.

Variance	T-value	2-tail Significance
Equal	-3.13	.002

F=2.891 P=.092

A T-test found that administrators who personally participated in VSOs were significantly more positive in their attitudes about VSOs than administrators who did not participate in VSOs. Table 7 shows the mean and standard deviation of the two groups and Table 8 contains the 2-tailed probability that shows the significant difference. Therefore, the null hypothesis is rejected and the alternative hypothesis is deemed tenable.

Table 7

Administrators personal participation in VSOs and their attitudes about VSOs.

Participation in VSOs	N	Mean	Standard Deviation
No	253	3.8	.621
Yes	164	4.1	.611

Table 8

T-test for administrators personal participation in VSOs and their attitude about VSOs.

Variance	T-value	2-tail Significance
Equal	-3.30	.001

F=.089 P=.765

An analysis of variance was performed to determine if differences existed between type of school the administrator represented and attitude about VSOs. The ANOVA found that there were no significant differences between the groups. An analysis of variance was performed to determine if differences existed between location of the school the administrator represented and attitude about VSOs. The ANOVA found no significant differences between the groups.

In the analysis for objective 3, administrators were asked in addition to paying current participation costs, would your school be willing to help fund state level vocational students organizations.

Less than three percent of administrators would be willing to fund state level VSOs at the state level. Sixty-two percent of the administrators were unwilling to fund VSOs, and 36% were unsure. Table 9 shows the frequencies and percents on administrators willingness to help fund VSOs at the state level.

Table 9

Frequencies and percent of administrators willingness to help fund state level VSOs.

Willingness to help fund state level VSOs	Frequency	Percent
No	265	61.5
Yes	12	2.8
Don't know	154	36.0

Additionally, when asked if state or national level funding cuts would affect their local VSO, 34 % said "yes". Of those administrators who said "yes", 59% would not fund VSOs at the state level. Figure 2 contains data from the crosstabs analysis.

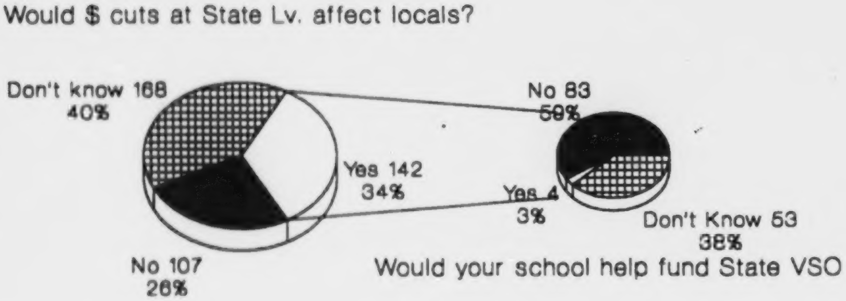

Figure 2. Administrator willingness to fund VSOs at the state level.

Correlations were performed to determine if the dependent variable, willingness to help fund state level VSOs with the type of school the administrator represents. Because the variables were measured on a nominal scale, Cramers V coefficients were used for the correlations. The correlations found negligible association (Davis, 1971) between type of school and willingness to help fund state VSOs.

Conclusions

Based on the findings of this study the following conclusions were formed:

1. Personal participation in VSOs by administrators as a student member, advisor, judge or alumni member leads to increased knowledge about VSOs.

2. Career/Technical schools, being devoted entirely vocational education, have more VSO chapters than other types of schools. Therefore administrators from career/technical schools had more opportunity for experience with VSOs and were more knowledgeable about VSOs than administrators from comprehensive or other schools.

3. Personal participation in VSOs by administrators as a student member, advisor, judge or alumni member leads to a more positive attitude about VSOs.

4. Administrators, although generally supportive of VSOs, are unwilling to help fund state level VSOs even if funding cuts at the state or national levels affects their local VSO.

Recommendations

1. It is the responsibility of everyone involved in vocational/technical education to provide opportunities for administrator involvement in VSOs. State and national VSOs can develop programs and provide incentives for administrators to attend VSO activities. Teacher associations can encourage administrators to become involved

though sponsoring administrator trips to national conventions and encourage teachers to invite their administrators to local, regional and state activities. Students can be very effective in encouraging administrators to become involved as contest judges, coaches and chaperons.

2. Career/technical administrators should be used as a educational resources or spokespersons by state and national VSOs and teacher associations.

3. The results of this study should be incorporated as revisions in the Perkins Act when it comes up for renewal. Adequate funding for VSOs should be reinstated through Perkins so that VSOs can accomplish their goals as an integral component to vocational education. Finally involvement of administrators in VSOs should be a top priority for the improvement and revitalization of vocational education and vocational student organizations.

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CONTRIBUTIONS OF VOCATIONAL EDUCATION TO EDUCATIONAL REFORM AS PERCEIVED BY VOCATIONAL EDUCATION POLICY INFLUENCERS

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CONTRIBUTIONS OF VOCATIONAL EDUCATION TO EDUCATIONAL REFORM AS PERCEIVED BY VOCATIONAL EDUCATION POLICY INFLUENCERS

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"Educational reform" has become the descriptor for the wide-ranging changes taking place in education today. While studies have documented educational change, the components and factors of change, and the impact of local level educational reform pilot projects, macro level issues regarding system-wide directions have been largely left to speculation and philosophizing. Vocational education, as one facet of the total educational system, has been conspicuously removed from much of the rhetoric surrounding educational reform (Asche, 1991).

Even though seemingly absent from broad-based educational reform, vocational education as a field and a focus of research is reforming and redefining itself. Lewis (1990) contends that the core of that field is work, and vocational education will "come to be defined as education aimed at the *preparation of people for a working life*" (p. 13). This definition ties closely with educational reform literature, which emphasizes preparing students for work life as a major function of the broadened educational system. In "Toward a New Paradigm" (p. 13) for vocational education, Lewis proposes a model for research assuming work as the focus of vocational education and the concepts work, occupations, labor markets, pedagogy, curriculum, context, ecosystem, clientele, and management as its anchors.

Currently available data from the field of vocational education is limited with respect to the evolving redefinition of vocational education. Some activity to define vocational education within the context of reform is taking place. Vocational education research has limited history in this type of endeavor; "traditional vocational research has tended to serve intrinsic ["what is best for the individual student"] goals" (Asche, 1991, p. 8).

As Frantz and Miller (1990) state:

> As the profession moves from the known to the unknown, it is imperative that contemporary issues and trends be identified and analyzed with respect to their implications for developing new policies and improving the practice of vocational and technical education. (p. i)

As vocational education moves into "the unknown" of educational reform, a systematic study of those who will influence the future of vocational education, via related policy, within the context of educational reform was lacking. The lack of a knowledge base concerning the perceptions vocational education policy influencers have of the future of vocational education holds the potential for unnecessary duplication or elimination of vocational education programs and practices which serve the interests of the reform movement and the redefinition of vocational education. This study endeavored to fill that gap in knowledge by addressing the following objective: to explore and describe those programs, activities and directions for the future which are the most critical components of vocational education given the reform of education, as perceived by vocational education policy influencers.

THEORETICAL FRAMEWORK/RELATED LITERATURE

This study is based in theoretical framework of change and educational change, and the literature related to educational reform and vocational education reform. Educational change theories support the statement of Frantz and Miller (1990) that "As the profession moves from the known to the unknown, it is imperative that contemporary issues and trends be identified and analyzed with respect to their implications for developing new policies and improving the practice of vocational and technical education (p. i)." Fullan's theory of educational change (1982) holds that many factors influence adoption and implementation of change. Among these factors are the existence and quality of innovations, access to information, advocacy from administrators, new legislation, and the characteristics of the change itself, i.e., the need and relevance of the change. Key policy influencers, who figure directly into several of these factors and are not often assisted by vocational education or vocational education research, provide vision and direction for the future regarding educational reform and vocational education. More than information is needed by these key people; "`intelligence, which goes beyond information'" is needed (Kaestle, 1993, p. 23).

The literature related to educational reform is diverse and extensive, documenting over a decade of reforms and initiatives (Darling-Hammond, 1990; Futrell, 1989; O'Looney, 1993). While this system-wide reform has been taking place, vocational education as a field and a focus of research is itself being redefined. This concurrent redefinition of vocational education as a field and a focus of research has shared in some of the reforms and initiatives. Lewis (1990) contends that the core of that field is work, and vocational education will "come to be defined as education aimed at the *preparation of people for a working life*" (p. 13). This definition ties closely to a major focus of the broadened function of educational system reform: preparing students for work life. In "Toward a New Paradigm" (p. 13) for vocational education, Lewis proposes a model for research assuming work as the focus of vocational education and the concepts work, occupations, labor markets, pedagogy, curriculum, context, ecosystem, clientele, and management as its anchors. Currently available data from the field of vocational education is limited with respect to the evolving redefinition of vocational education. Some activity to define vocational education within the context of reform is taking place. Vocational education research has limited history in this type of endeavor; "traditional vocational research has tended to serve intrinsic ["what is best for the individual student"] goals" (Asche, 1991, p. 8).

Lewis' concepts of context and management include policy concerns associated with a broadened function for the educational system; however, "one of the major implications of educational reform may be an increased need for policy-relevant types of vocational research" (Asche, 1991, p. 8). Additionally, "vocational education research is significant if it is nontrivial and if it contributes directly or indirectly to...improving the human condition" (Swanson, 1991). The field of vocational education is not alone in being asked for increased policy relevance in its research; similar calls are being made across educational research. Kaestle (1993), reported that many policy influencers find fault with basic educational research; "basic research in education `doesn't lay a very great claim on anyone's agenda save researchers'" (p. 26).

METHODOLOGY

To explore these directions, a panel of vocational education policy influencers nominated by leaders in the field participated in a three-round, modified Delphi study (Helmer, 1966; Linstone & Turoff, 1975). These panelists included individuals influential in state and federal vocational education related policy who hold positions at state, national and federal levels both inside and outside of education and public service. In accordance with the findings of Dalkey (1972) on response reliability and Delphi panel size, nineteen selected individuals agreed to participate in the study. Fifteen completed all three rounds. The selected group of panelists was mailed the first survey instrument which contained a number of literature-based items. Initial items dealt with educational reform, vocational education, curriculum, school organization and management, governance structures, and assessment systems. Panelists were asked to agree or disagree with each item as a component of vocational education's contribution to the reform of education in the future, indicate how certain they were of their position, and provide a rationale for their position. The opportunity to suggest additional items, and provide a rationale for their inclusion in future rounds, was given to panelists.

Panelists' responses were tabulated to ascertain if a pre-determined statistical consensus was reached on each item. Agreement/disagreement and certainty scores were transformed into a single certainty-scale value which represented the panelist's response to the item (Lux, 1993; Wolins & Dickinson, 1973). When 80% of the certainty scores fell around the mean agreement/disagreement score on an item, consensus was judged to have been achieved for that item. In the case of consensus around a mean certainty value between +/-2 or a standard deviation larger than 3.5 scale units, the item was included in successive instruments. Items on which consensus (either in agreement or disagreement) was not reached were repeated on the second round instrument. Panelists were provided with the percentage of panelists in agreement and disagreement with each continuing item, their response from the previous round, summarized comments from the previous responses, and additional items suggested by panelists on the second round instrument.

This process was followed in the second round, employing the same procedures for determining consensus and developing the Round 3 instrument. Following the return of the Round 3 instruments, consensus calculations were made by implementing the same procedures and all remaining items characterized with descriptive statistics.

Final round statistics included mean certainty values, which were calculated for each item. Along with these statistics, variability was described through standard deviations for those items on which consensus was and was not achieved. These statistics have been deemed appropriate for use as accurate descriptive statistics with the Delphi technique (McCampbell & Stewart, 1992).

Final comments were also reviewed and synthesized to further describe the panelists responses to each item. Common themes accompanying a given item were described and presented along with the statistical description for that item.

FINDINGS

Consensus among experts is not easily achieved, and this study proved to be no exception. The results of this study represent the collective opinion of a selected group of vocational education policy influencers at the time of this study; care must be taken not to construe their perceptions as that of the entire field of vocational education. However, their perceptions at this point in history give insight into the condition of vocational education within the context of educational reform as the turn of the century approaches.

Fifty-one items were considered by panelists; 20 items were posed on the original instrument and 31 were added by panelists. Consensus-agreement was achieved on 29 of these items; consensus-disagreement was achieved on one. Consensus-agreement items included student-focused programs/activities (e.g., "Apprenticeship programs," "Tech-prep," "Career guidance"), general teacher-focused activities/programs (e.g., "Teacher inservice"), system/coordination issues (e.g., "Joint participation..."), and the focus, goals and philosophy of education and vocational education (e.g., "development of...workplace knowledge"). Consensus-disagreement was reached on "School choice programs (i.e., vouchers)." A complete listing of all consensus items is found in Table 1.

Items not achieving consensus included specific teacher activities (e.g., "Increased academic requirements..."), and items which had unclear/ multiple definitions (e.g, "`Comprehensive' vocational education," "re-think program evaluation"). Nonconsensus items are listed in Table 2.

Table 1. Consensus items following 3 delphi rounds

Original Items	Panelist-suggested Items
Preparation of students for a productive work life	Postsecondary vocational education and the
Development of students' workplace knowledge	Alternative teacher education strategies Integration of vocational and academic
Alternative assessment programs	
School choice programs (i.e., vouchers)*	Tech prep
Apprenticeship programs	Certificate of initial mastery
Entrepreneurship education programs	Teacher inservice
Outcome-based instruction	Research
Site-based management programs	Coalitions
Career guidance programs (beginning at the primary grade level)	Knowledgeable leadership Experience based learning in context
Preparation of special needs students (as defined in the Perkins Vocational and Applied Technology Education Act) for a productive worklife	Focus on learners - "talent developers" Purpose of school is workplace oriented Schooling is community-based Lifelong learning is a primary goal of education
Vocational education as a content area of education	Elimination of the general education track Pre-service preparation of educators
Joint participation of vocational educators and other educators in determining the direction of reform	
Articulation programs	

* consensus-disagreement

Table 2. Nonconsensus items following 3 delphi rounds

Original Items	Panelist-suggested Items
Vocational education as one of the principle goals of the reformed educational system	Dropout prevention Secondary/postsecondary distinction and
Vocational education as a subset within the educational system	"Comprehensive" vocational education Increased academic requirements/ credentials for
Revision local governance structures	
Revision state governance structures	Re-think program evaluation - use proactive
Revision the federal governance structure	
National education standards, as called for in the High Skills or Low Wages and Learning a Living national reports	Focus on work rather than jobs at the K - 12 level Employer and union involvement Reward and incentive system for teachers and
Specific occupational preparation	
	State-of-art facilities
	Local, state and federal funding
	Citizen/Community advisory committees
	Technology education
	Systemic change
	Value of vocational training
	Implement waiver programs at all levels

DISCUSSION

The three rounds of the Delphi yielded both agreement and disagreement, and a wide range of rationale behind each position. Clear definition of items was critical; those items achieving consensus had clearly understood meanings or meanings clarified through the Delphi process. The bulk of the consensus items dealt with programs and activities; items focusing on directions seemed more difficult on which to reach agreement. Consensus and nonconsensus will be discussed separately.

Items Achieving Consensus

Items which achieved consensus included a wide range of programs, activities and directions. Items fell into four broad categories: specific programs/activities for students, specific activities/programs for teachers, system and coordination issues, and the focus, goals and philosophy of education and vocational education.

The largest number of the consensus items were program/activity oriented; the majority of those were student-focused programs that currently exist to some extent (e.g., apprenticeship programs, career guidance programs, tech prep, articulation programs). Two newer student-focused initiatives being put forward in educational reform literature, certificates of initial mastery and alternative assessment programs, also received support from the panel.

Programs for teachers were less prominent, and the items were stated as generalities (pre-service preparation of educators, teacher inservice). Several teacher-related activities discussed in the literature received consensus; these included alternative teacher education strategies and site-based management.

System and coordination issues were also less likely to have achieved consensus; those that did (joint participation of vocational educators and other educators in determining the direction of reform, postsecondary vocational education and the employment and training system, integration of vocational and academic education, coalitions) were action-oriented, involved collaboration with people and institutions beyond the traditional sphere of vocational education, and are widely supported in literature.

The focus, goal and philosophical items appeared to support the other consensus items. The "focus on learners" was evidenced in the array of programs deemed critical; "experience based learning in context" is seen in the nature of many of these programs. The concept of work was the foundation of three consensus items: development of students' workplace knowledge; preparation of students (including special populations) for a productive work life; purpose of school is workplace oriented. Supporting the consensus items addressing coordination, the item "schooling is community-based" spoke to the system concerns. Underlying all of the items was the idea that "lifelong learning is a primary goal of education," which achieved consensus the first time it was presented to panelists.

Several consensus items were more pronounced for the comments made by panelists than for the subject of the item. The item "knowledgeable leadership" brought comments of "needed but lacking in voc. ed.," and "Its [sic] crucial that we have knowledgeable leadership for the complex programs we are carrying out. Leadership not now in place." The item "research" was responded to with "all worthy initiatives should be well grounded in research...," and "we need relevant research than can be applied. too much of what's going on is related to the `publish or perish' requirement of Higher Ed faculty -- the application, transfer of knowledge is not here."

Panelists were not as definite about some items as others. The most certain consensus was with the items "Preparation of students for a productive work life" and "Integration of vocational and academic education," both of which are espoused frequently in current literature. In contrast, "vocational education as a content area of education" barely achieved consensus, and from the comments of panelists, could have been given a variety of meanings.

One item achieved unanimous consensus in disagreement. Panelists did not consider "school choice programs (i.e., vouchers)" a critical component. The comments indicated major concerns with the concept of vouchers and the impact of choice on equity, quality, and the educational system.

Items Not Achieving Consensus

The items not achieving consensus also displayed commonalities. Specific activities with regard to teachers (increased academic requirements/ credentials for vocational teachers, reward and incentive system for teachers and administrators) and coordination (employer and union involvement) were moving toward but did not reach consensus in three rounds. Items which seemed to have unclear or multiple definitions to many panelists (e.g., secondary/postsecondary distinction and coordination, "Comprehensive" vocational education, re-think program evaluation - use proactive measures, systemic change) also did not achieve consensus.

Two items suggested by panelists, "technology education" and "dropout prevention," did not achieve consensus; but comments pro and con indicated that these were deemed the responsibilities of the broader system of education, not just vocational education. On the goal and philosophy level, panelists could not achieve a unified opinion with regard to "vocational education as one of the principle goals of the reformed educational system" and "vocational education as a subset within the educational system." In the case of former item, positions seemed to be polarizing, making this more of an issue. Panelists also could not agree on the items "focus on work rather than jobs at the K - 12" or "specific occupational preparation." Positions also appeared to be polarizing on the item "specific occupational preparation."

The lack of consensus on some items also seemed to be contrary to items which did achieve consensus. For example, consensus was achieved on some system related items (including comments on the need for a national level employment and training policy) while no consensus was achieved on the need for revision of any of the educational governance structures, either local, state or federal. Consensus on the item "preparation of special needs students (as defined in the Perkins Vocational and Applied Technology Education Act) for a productive worklife" as being critical contrasts with no consensus being achieved on the item "dropout prevention," which serves a group considered to be a special population. While the item "certificate of initial mastery" was considered a critical component, the "national education standards, as called for in the High Skills or Low Wages and Learning a Living national reports" did not achieve consensus as being critical.

IMPLICATIONS AND RECOMMENDATIONS

As educational change literature holds, the programs, activities and directions explored in this study are "multidimensional" (Fullan, 1982, p.30), and consist of complex "dynamic interrelationship[s]" (p. 33). The polarization of panelists on some items highlights these complexities. Simplistic approaches to the contribution of vocational education to educational reform only avoids the realities and prolongs the isolation of vocational education from the total educational community. Isolated activities, programs and directions are not going to move vocational education into the future of the reformed educational system.

The panelists in this study also concurred with change theory in emphasizing the need for the involvement of a variety of agencies and individuals in the processes that are taking place. Change, educational change, educational reform, total quality improvement, and futures literature all stress the importance of vision and involvement; while this notion of involvement and collaboration is not new, the nature of that involvement and collaboration is no more clearly defined today than in the early days of educational reform.

Change literature also indicates the necessity of strong and visionary leadership; this leadership appears to be lacking in vocational education today. As a result, the elements of strategic planning and management which coalesce around this leadership are largely absent. The critical components identified by this panel indicate that the lack of a "coherent philosophy" observed by Miller (1985, p. 1) still exists today. The comments of panelists, and the conflict between items which attained consensus and closely related items which did not achieve consensus illustrate the variety of beliefs which underlie the positions held by policy influencers; a cohesive foundation which ties programs, activities and directions together appears to still be a need.

This panel supported many issues raised by the educational reform literature. Critical components as perceived by this panel included items on articulation, integration of vocational and academic education, preparation for productive work life, and development of workplace knowledge; all of these topics are consistent with the calls of reform reports dating to the 1980s and the current charge of education to prepare students for participation in a high performing workplace (Holt, 1993; Schmoker & Wilson, 1993; Wirth, 1993). The critical components identified in this study clearly fall in line with the fourth wave of education reform observed by Futrell (1989), which combined the economic and student-oriented, intrinsic aspects of the earlier waves of educational reform; in other words, "an education that prepares tomorrow's adults to meet ethical as well as economic imperatives - that prepares them not only for a life of work, but also for a life of worth" (Futrell, 1989, p. 13-14). Clearly, while the task identified in this fourth wave is to redefine goals for education and to restructure a system in which those goals may be achieved (Darling-Hammond, 1990; Futrell, 1989; Price, 1990; Timor & Kirp, 1989; Tye, 1992), vocational education does not as yet have a clear set of goals within the context of the current environment.

The findings of this study also indicate that knowledge generated by much of the current research is not supportive of the issues faced by vocational educators today. The harshness of some comments from panelists display frustration with research support systems which should be helping to direct practice. Again, this frustration and the lack of communication is not a novel finding; however, the continuing trend repeated in this study gives further support to the perception that the producers of research knowledge in the field are and continue to be distanced from the practice of the field.

Issues

These findings and implications for knowledge raise a number of issues with implications for practice. Foundational to many issues is the conflict between isolation and involvement. The isolation of vocational education is frequently self-imposed and rooted in traditions; involvement is a popular expression and was discussed by panelists in a number of items, but rhetoric does not create active involvement by vocational education in and with the broader educational system and educational reform. The consequences of continued isolation could be monumental; the separation of vocational education from the changes taking place in the educational system could spell the demise of the field of vocational education as it has been known. Non-involvement could lead to non-inclusion, or even intentional abandonment of what is called vocational education, particularly at the secondary level.

Another issue is the role of vocational education in the reformed educational system. Current practice is deeply divided on the subject of appropriate goals for vocational education, and the findings of this study exhibit that continuing division. What type of vocational education for whom at what level of their education provided where and by whom are all components of the role issue. Is the tight grip on occupational specific secondary programs a remnant of an archaic vision of vocational education? Or, are there reasons based in current vision for these programs?

Does a vision for vocational education currently exist? It seems that history overwhelms vocational education, and impedes much of the field from entertaining the potential of the environment of today. Answering these questions will require inward and outward reflection, and undoubtedly will cause agitation and upheaval within the field.

Tied to the role issue is the issue of the vision and philosophy of vocational education. The lack of a commonly held, working philosophy fuels the division on the role of vocational education in a reformed educational system. Without a base of what is real, true and of value in vocational education, how can a role and direction be defined? Can we even consider a role valid if it has an unclear foundation?

The results of this Delphi also raise a communication issue; widely used terms and phrases have a wide range of definitions. Even those influential in the development of policy for vocational education had a variety of definitions for terms, and meanings were often confused. If these knowledgeable individuals have this much difficulty, how much more problematic is the terminology for those outside of or tangentially involved in vocational education? This lack of clarity and common definition might be construed as a measure of flexibility, or a sign of uncertainty. Either case holds the potential for definition to be made and imposed by external sources, removing the ability to self-determine direction from the field. Before vocational education can contribute effectively in the larger community, the field must clarify these meanings for itself.

The issue of appropriate teacher education relates directly to practice; questions raised by the panel include the variability of current teacher education programs, the necessity of a baccalaureate degree, and the continuing learning of teachers. Although the Holmes group initiative was mentioned, it did not figure prominently in comments; what ramifications does that fact have for vocational teacher education? Is this a continuation of the trends of isolation and limited involvement? Or is this a manifestation of the thought voiced in the comment "If it were possible to develop the agreement regarding what the teacher needed to know - then develop the "assessment instruments to judge them - then why would one care where the individual gained those competencies?" Who should decide "what the teacher needed to know" and how to judge them? Perhaps the responsibility for teacher education should be taken from the hands of teacher educators, and placed more directly in the hands of successful practicing educational professionals. The practice of teacher education has been slow to acknowledge the changes taking place in the school environment, and without attention to these questions, could serve only to ill-prepare teachers and impede the contributions vocational education could make to the total educational system and educational reform.

Also in the realm of the college and university is the issue of the role of research. Based on the findings, much of the research being conducted in vocational education is not supportive of vocational education practice; should support of practice be the role of research? If so, what does that mean for the current status of vocational education research? Is the university the appropriate entity to be called on for applied research, or should this practice-centered work be the province of state agencies? The issues emanating from this study make clear demands for investigation; however, many of the issues will be resolved with or without the backing of relevant research. Can research be conducted in a manner so as to aid in the timely resolution of issues, or do things just change too fast for solid research studies to be completed? These issues also provide links to other areas of research, including cognitive science, sociology, psychology, and public policy; how is vocational education taking advantage of advances in these areas within its own research? What are the ramifications if vocational education research does not incorporate the work of other fields into its own work?

A final issue revolves around the issue of a coordinated, cohesive national employment and training policy. A number of panelists called for this, alluding to potential changes and recombinations at the federal level. The practice of education, including vocational education and training, remains largely a state and local prerogative. National level mandates for cooperation between education and employment programs have had a temporal effect similar to that of shaking oil and water; would a national policy be able to function as an emulsifier to create such a coordinated and functioning national employment and training system? Embedded in these issues are sub-issues including that of turf, power and control; is vocational education too caught up in these issues to focus on the total system issue and the total system goal? An interesting sub-issue is also found in the contradictory positions of panelists in this study; although a national level employment and training policy was the subject of much comment and included the idea of Labor, Commerce and Education combined efforts, panelists could not reach consensus on the revision of governance systems. Can governance be separated from a national policy spanning programs and activities of at least three separate federal agencies? Will the national policy be effective if it is?

These issues underscore the complexities surrounding the future of vocational education and contribution of vocational education to the reform of the total educational system. Practice is not detached from issues; on the contrary, it is often bound by them. Dealing with these issues may be as complex as the issues themselves. Vocational education professionals must take the lead or be led.

The many questions raised by this panel, though not all new, merit revisiting and reconsideration; they provide a starting point for practice-related study. The questions of when occupational specialization should begin, where should skills be taught, how should vocational teacher education be reformed, what functions can best be carried out by each level of government, what is the purpose of the secondary/postsecondary distinction, what are proactive program evaluation measures, what does employer and union involvement mean today ("work site learning for credit? curriculum development and approval? assessment of skills and knowledge?"), and if "in context" is "different than experience based" were raised by panelists during this study. These valid questions need to be reassessed and contemplated in the changing environment of vocational education today.

IN CONCLUSION

The end result of this study is a beginning clarification of positions on the directions vocational education should take in the future, as seen by individuals in position to influence that direction. Implications for knowledge and practice are critical. The need for further study is great. Additional work should be undertaken to:

1. refine the list of critical components;
2. address questions raised by the panelists in this study;
3. determine if the items critical to policy influencers are seen as critical by other stakeholders in vocational education, (e.g., local, state and federal administrators, teacher educators, teachers, and legislators);
4. document the development of a vision, focus, and philosophy for vocational education;

5. explore the definitions of items included in this study, especially those items which were unclear or had multiple meanings;
6. establish a longitudinal study of the implementation and impact of the activities, programs and directions incorporated into future vocational education within the reformed educational system; and
7. investigate the items on which panelists appeared to be polarizing (i.e., those items which were becoming issues).

In addition to the items previously discussed, these seven are of critical importance for both the immediate and longer term future of vocational education given the environment of educational reform.

No one study will provide the definitive answer; rather as one panelist noted, the issues are complex and must be addressed simultaneously. Future directions for vocational education, as seen by individuals able to influence that direction, hold implications for the field, and raise issues for practice. Among these issues were the conflict between isolation and involvement in the total educational community, the role of vocational education, common philosophy and vision for vocational education, internal and external communication, "appropriate" teacher education, the role of university research, and national employment and training policy.

Much of the insight garnered here provides just a glimpse at what those who have demonstrated impact on vocational education related policy see as the contributions of vocational education; this glimpse shows some accord as well as a certain amount of confusion and vagueness about certain programs, activities and directions. As one of the panelists noted, vagueness does not make good policy; neither will ambiguities lend themselves to effective change.

Change will occur with or without the support and guidance of relevant research, and the choice is to become wholly involved or be passed by. A move toward a consensus on the future directions for vocational education, given the environment of educational reform, enhances the current literature base, and empowers vocational education as a field to guide itself into the future.

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PRINCIPALS' PERCEPTIONS OF NON-TRADITIONAL GENDER VOCATIONAL TEACHERS

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PRINCIPALS' PERCEPTIONS OF NON-TRADITIONAL GENDER VOCATIONAL TEACHERS

INTRODUCTION AND CONCEPTUAL FRAMEWORK

The goal of education is to provide opportunities to gain knowledge, skills and attitudes that prepare young people for the adult world. To accomplish this purpose, schools should follow goals and objectives which communicate a philosophy of equality for all. The climate of equitable learning can help all students become aware of the careers available to them and help prepare them for the changing roles at home and in the workplace. Biased opportunities and differential expectations resulting from sex bias and role stereotyping can cause students to lose the freedom of career choice and limit their ability to learn. Furthermore, sex bias and stereotyping may negatively affect a state's economy and quality of life by not utilizing the skills and talents of all students most effectively (Wisconsin Department of Public Instruction, 1990).

Even though the elimination of sex bias and sex stereotyping has been a national priority in vocational education for a number of years, many educators and administrators still hold sex biased and sex stereotyped attitudes about labor force participation and have a belief that there are "men's" and "women's" jobs. Very often, traditional attitudes about the "proper" role and abilities of men and women bring individuals who make non-traditional vocational choices into a hostile working environment. Numerous activities have been initiated in attempts to change this situation by working toward attracting more individuals into non-traditional occupations.

Since traditional vocational education enrollments have been highly segregated by gender, both federal and state laws have been aimed at nondiscrimination by gender. These laws have set forth standards and procedures to overcome bias on the basis of gender and have established programs designed to achieve educational equity for both females and males. Even though overt sex bias and stereotyping is less prevalent than 20 years ago, inequities still remain (Wisconsin Department of Public Instruction, 1990). Dobry (1986) commented that the purpose of these legislative mandates and subsequent monitoring of educational programs was generally to overcome overt sex bias and sex stereotyping. However, covert societal barriers of sex discrimination were still apparent. These biases, wherever they exist, have hindered the prospective student from considering non-traditional educational and career options.

Technological advances in society and the resulting changes in agriculture, business, and industry have influenced twentieth-century family life. Therefore, sex equity and sex role stereotyping are areas in vocational education that are currently undergoing change. Until the attitudes of vocational educators and other educational authorities reflect a willingness to accept any person, regardless of gender, in any program of vocational education, there is room for change and need for improvement.

A study of sources affecting sex bias and sex stereotyping of vocational teachers is critical to provide more productive programs. The local school principal typically has the greatest impact on school level employment decisions because the school principal is the chief executive officer or administrator of the basic unit in the school system. According to Linn (1988), the administrators are the key personnel to actually achieve and maintain sex equity in schools. They can best recognize appropriate strategies to overcome barriers to implementation. Therefore, principals' attitudes logically would be a key factor in elimination of sex bias in vocational teaching areas.

PURPOSE AND OBJECTIVES

The purpose of this study was to determine the attitudes of local secondary school principals in Louisiana toward hiring vocational teachers for positions where the teacher is from the minority gender (i.e.--females as vocational agriculture teachers and males as home economics teachers).

This study was conducted to accomplish the following specific objectives:

1. Describe schools in Louisiana regarding vocational programs offered and other selected characteristics.
2. Determine the attitudes of high school principals in Louisiana toward hiring vocational teachers into non-traditional gender teaching roles.
3. Compare principals' attitudes toward non-traditional occupations for men with their attitudes toward non-traditional occupations for women.
4. Determine if relationships existed between principals' attitudes toward hiring vocational teachers into non-traditional teaching roles and selected principal and school demographic characteristics.

METHODS AND PROCEDURES

The target population in this study was defined as all principals in Louisiana public secondary schools. The target population was identified by the Louisiana School Directory published by the Louisiana State Department of Education.

A simple random sampling procedure was used to draw subjects for inclusion in the study. The sample size needed for representativeness was determined using Cochran's sample size determination formula (1977).

The population of 339 public secondary principals in Louisiana was determined to require a sample of 122 to achieve the desired representativeness and maintain the established the degree of precision. A simple random sample of 125 was drawn for inclusion in the study.

The development or selection of any instrument to measure sex bias and role stereotyping is a very difficult task. The data collection instrument for this study was not different. If one is to accurately measure sex bias and sex stereotyping, the instrument must be capable of measuring this attitude without being threatening or embarrassing to the individuals being surveyed.

Accurate measurement of sex bias and sex stereotyping with an instrument, which is perceived by the sample to be directed to this matter, would be a very unlikely. Due to this fact, the questionnaire was developed in an attempt to mask the main item of interest--sex bias and sex stereotyping. In addition, an extensive literature review did not reveal an existing instrument to accomplish this purpose. The design of the instrument was accomplished by taking an existing instrument which was designed to measure perceptions of vocational education and adding items which would permit the researcher to assess the attitude toward hiring non-traditional teachers as well as the perception of vocational education.

The instrument, which was originally intended to measure the attitude toward vocational education by local school administrators in Louisiana, was developed by Miller, (Miller, 1981) and then was modified by the researchers for the purpose of this study. Twenty-eight statements were used and the responses indicated on a five-point Likert-type scale with 1 being strongly disagree and 5 being strongly agree. Of the 28 items, 10 items were related to identifying principals' attitudes toward hiring non-traditional gender vocational teachers. The sex equity items were dispersed among the distracters so as to render them as non reactive and non threatening as possible.

Content validity of the instrument was established through a review by a panel of experts consisting of faculty members from the School of Vocational Education, Louisiana State University; personnel of the Louisiana State Department of Education and selected other professionals in Vocational Education. The researcher-designed instrument also included selected demographic variables, which were chosen on the basis of previous research findings. These variables included: Geographic area of school (rural or urban), previous classroom teaching field, years of experience as a classroom teacher, vocational programs offered in the school, and the school size.

Data were collected by mailed questionnaire. Each member of the sample received a cover letter and a copy of the instrument. The first questionnaires were mailed to the 125 principals, accompanied by a self-addressed, stamped envelope and cover letter. Follow-up procedures were utilized to improve the representativeness of the data. Within four weeks after the first mailing, 84 (67%) principals had responded. A second mailing, asking principals' assistance by completing and returning their questionnaires, was sent to all non-respondents. After the second mailing, another 24 (19%) responses were obtained. A third set of questionnaires was sent to the remaining non-respondents. After the third mailing, the researcher received seven (5.6%) more responses which made a total of 115 or a 92% return rate.

FINDINGS

Respondents were asked to indicate vocational programs offered at the school they administered. The majority of schools were reported to offer business education (107 or 93%), vocational home economics (98 or 85%), and vocational agriculture (92 or 80%) (See Table 1). Fifty-four schools (47%) included technical & industrial education, while only eight schools (7.0%) included other vocational education programs.

Table 1

Vocational Programs Offered at School

Vocational Program	Frequency	Percent
Business Education	107	93.0
Home Economics	98	85.0
Agriculture	92	80.0
Technical and Industrial Education	54	47.0
Other[a]	8	7.0
Missing	1	0.9

[a] Other = Respondents who reported other programs offered did not specify those programs.

To further summarize the data and to facilitate subsequent data analysis, the schools were grouped on the basis of how many vocational programs were reported as being offered.

The majority of schools (67 or 58.3%) offered three vocational education programs (See Table 2). Nineteen schools (16.5%) each offered four or two vocational programs. Three categories; three, four, and two vocational programs offered encompassed the majority of the number of vocational programs offered at schools in the study.

Table 2

Number of Vocational Programs Offered at School

Vocational Program	Frequency	Percent
Five or more	2	1.7
Four	19	16.5
Three	67	58.3
Two	19	16.5
One	1	0.9
Total	115	100.0

To measure the size of schools administered by principals in the study, respondents were asked to indicate the state athletic school size classification for their school. The number of schools from each classification are presented in Table 3. Schools were distributed relatively evenly across classifications ranging from class C to class AAAA. The range of percentages in these categories was from a low of 13.2% in the AAA category to a high of 19.3% in the AA category. Two principals (1.8%) reported that their schools were classified as AAAAA.

A total of 10 scale items in the instrument were designed to determine the principals' attitudes toward hiring non-traditional teachers in vocational education. Principals were asked to respond to the statements on a five-point Likert-type scale having numerical values as follows: 1-Strongly Disagree; 2-Disagree; 3-Undecided; 4-Agree; and 5-Strongly Agree. Mean responses were tabulated and used to indicate the attitudes held by local school principals, based on the following interpretive scale established by the researcher: 1.5 or less = Strongly Disagree; 1.51 to 2.5 = Disagree; 2.51 to 3.5 = Undecided; 3.51 to 4.5 = Agree; and 4.51 or more = Strongly Agree.

Examination of data in Table 4 reveals that principals agreed with the statement, "I would be inclined to employ a female agriculture teacher if she was qualified." (mean = 3.73) The respondents disagreed with 2 of 10 statements. However, mean responses on 7 of 10 statements were in the undecided category.

Of the 10 scaled items in the instrument which were designed to measure principals' attitudes toward hiring a non-traditional vocational teacher, three items dealt specifically with males in non-traditional roles and five items dealt specifically with females in non-traditional roles.

Table 3

Classification of School Size

School Size[a]	Frequency	Percent
C	17	14.9
B	21	18.4
A	16	14.0
AA	22	19.3
AAA	15	13.2
AAAA	21	18.4
AAAAA[b]	2	1.8
Missing	1	-
Total	115	100.0

The three items for men were as follows:

> Parents may have some concern about their daughters enrolling in a home economics class taught by a male. (mean = 3.03)
>
> High school girls would be less inclined to enroll in home economics if it were taught by a male. (mean = 2.75)
>
> I would be inclined to employ a male home economics teacher if he was qualified. (mean = 3.46)

The five items for women were as follows:

> I would be inclined to employ a female agriculture teacher if she was qualified. (mean = 3.73)
>
> Females should be encouraged to enter non-traditional teaching areas, such as agriculture. (mean = 3.46)

> High school boys would be less inclined to enroll in technical and industrial education if it were taught by a female. (mean = 2.59)
>
> Female vocational teachers have more discipline problems than do male vocational teachers. (mean = 2.36)
>
> A female agriculture teacher might convey a negative image of the agriculture program to the community. (mean = 2.05)

In addition, six statements such as, "Female vocational teachers have more discipline problems than do male vocational teachers," were asked on a reversed scale when compared with the other items such as, "I would be inclined to employ a female agriculture teacher if she was qualified." In other words, to agree with some items was the more positive response, and to disagree with some other items was interpreted as the more positive attitude toward sex equity. Therefore, the direction of all items was made the same by reversing scales. Then an overall mean for males and an overall mean for females was computed on the items identified as related to males and females respectively. A t-test was then used to compare the attitudes of principals toward hiring males in non-traditional roles with the attitudes toward hiring females in non-traditional roles. Results of the t-test indicated that the female mean response was greater than the male mean response by 0.42 (See Table 5). This difference indicated that principals' attitudes toward non-traditional vocational teaching roles for women was more positive than those for men.

Kendall's Tau correlation coefficients were used to assess the relationship between school demographic variables and principals' attitudes toward hiring vocational teachers into non-traditional teaching roles. The interpretation of correlation coefficients was based on the set of descriptors proposed by Davis (1971), which are as follows: 0.01 to 0.09--negligible association; 0.10 to 0.29--low association; 0.30 to .49--moderate association; 0.50 to 0.69--substantial association;0.70 or higher--very strong association. The significance level was set á priori at 0.05. Since principals' attitudes toward non-traditional vocational teaching roles for men was different from principals' attitudes toward non-traditional vocational teaching roles for women, the correlation between principals' attitudes toward hiring vocational teachers into non-traditional teaching roles and selected demographic characteristics needed to be obtained for gender separately. The correlation between population density of the geographic location and principals' attitude toward sex equity for women was found to be $r = 0.21$ ($p < 0.0001$), indicating a significant low positive association (See Table 6). Regarding the correlation between school size and principals' attitudes toward sex equity for women, a coefficient correlation of $r = 0.24$ ($p = 0.00$) was obtained, indicating a significant low positive association. Association between other variables and principals' attitude toward sex equity for women, were negligible.

Table 4

Attitudes of Local Principals Toward Hiring Vocational Teachers into Non-Traditional Gender Teaching Roles

Item	Mean[a]	SD
I would be inclined to employ a female agriculture teacher if she was qualified.	3.73	0.98
Females should be encouraged to enter non-traditional teaching areas, such as agriculture.	3.46	0.88
I would be inclined to employ a male home economics teacher if he was qualified.	3.46	0.98
Non-traditional vocational teachers (female agriculture teachers, male home economics teachers, etc.) are accepted by their respective peers as readily as traditional teachers in that field.	3.10	0.84
Parents may have some concern about their daughters enrolling in a home economics class taught by a male.	3.03	1.00
Overnight field trips would present a problem to vocational teachers who were not the same gender as the majority of their students.	2.78	1.14
High school girls would be less inclined to enroll in home economics if it were taught by a male.	2.75	0.95
High school boys would be less inclined to enroll in technical and industrial education if it were taught by a female.	2.59	0.93
Female vocational teachers have more discipline problems than do male vocational teachers.	2.36	0.92
A female agriculture teacher might convey a negative image of the agriculture program to the community.	2.05	1.03

[a]Scale values were: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, 5 = strongly agree.

Table 5

Comparison of Principals' Perceptions Toward Non-Traditional Occupations by Gender

Gender	M	SD	t	p
Male	3.22	0.75	7.64	0.0001
Female	3.64	0.57		

Table 6

Relationship Between School Demographic Variables and Principals' Attitude Toward Sex Equity for Women

Variables	r[a]	p
School size	0.24	0.01
Population density of the graphic location	0.21	0.01
Number of years of administrative experience	-0.03	0.34
Highest degree principals held	-0.03	0.34
Number of years of teaching experience	0.02	0.42

[a] Correlation coefficient used was Kendall's Tau.

The correlation between population density of the geographic location and principals' attitudes toward sex equity for men was found to be $r = 0.15$ ($p = 0.02$), indicating a significant low positive association (See Table 7). Regarding the correlation between school size and principals' attitudes toward sex equity for men, a coefficient correlation or $r = 0.21$ (0.00) was obtained, indicating a significant low positive association. Other variables were negligibly related to principals' attitude toward sex equity for men.

Table 7

Relationship Between School Demographic Variables and Principals' Attitude Toward Sex Equity for Men

Variables	r^a	p
School size	0.24	0.01
Population density of the graphic location	0.15	0.02
Number of years of administrative experience	-0.05	0.28
Highest degree principals held	-0.03	0.34
Number of years of teaching experience	0.02	0.40

[a] Correlation coefficient used was Kendall's Tau.

CONCLUSIONS

1. The majority of schools offered business education, vocational home economics, and vocational agriculture.

2. The majority of schools offered three different vocational programs.

3. School size was distributed relatively evenly across categories from class C to class AAAA.

4. Principals were ambivalent toward hiring vocational teachers into non-traditional teaching roles.

5. Principals perceived non-traditional occupations for women more equitably than non-traditional occupations for men.

6. Population density of the geographic location was positively related to principals' attitudes toward sex equity for both genders.

7. School size is positively related to principals' attitudes toward sex equity for both genders.

8. Principals in larger schools tended to have more positive attitudes toward hiring vocational teachers into non-traditional gender teaching roles for both men and women than principals in smaller schools did.

RECOMMENDATIONS

Based on these findings and conclusions, the researcher would recommend that institutions of higher learning, charged with the responsibility of preparing school principals, incorporate knowledge and promote understanding of sex equity toward hiring of teachers into non-traditional teaching roles, particularly vocational teachers. If this is done, local school principals may recognize future economic gains and personal self-sufficiency from attention to elimination of sex bias. The researcher also would recommend that institutions of higher learning provide non-traditional role models, particularly former teachers who have succeeded in non-traditional fields, to demonstrate to principals that success and job satisfaction are possible. The researcher also would recommend that universities and the department of education continue to develop strong recruitment programs, and advance vocational education curricula. In addition, further study should be conducted to gain more information regarding principals' attitudes toward specific vocational education programs.

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Multivariate Analysis of Perceptions Held by Vocational Educators Toward Female Participation in Nontraditional Programs

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RUNNING HEAD: Multivariate Analysis of Perceptions

Abstract

This study investigated vocational educators' perceptions toward female participation in nontraditional postsecondary programs by examining the underlying dimensionality of their perceptions and then determining the relative influence of select variables (gender, ethnic group, age, educational level, and current position) on those dimensions. A self-administered questionnaire containing 22 perception statements was mailed to a systematic sample of 315 vocational educators at 2-year postsecondry technical institutes in Georgia. A 61.58% response rate found a positive perception toward female participation in nontraditional programs. An exploratory factor analysis using a principal components procedure with varimax rotation generated four dimensions (promotion of females in nontraditional programs, perceived educators' role in nontraditional programs, female enrollment in nontraditional programs, and barriers for females entering the male's world). MANOVA and post hoc ANOVA procedures revealed that gender and current position had significant impact on educators' perceptions toward female participation in nontraditional programs; female vocational educators' perceptions were more positive than their male counterparts, and counselors were more likely to promote females entering nontraditional programs than administrators and instructors.

Multivariate Analysis of Perceptions Held by Vocational Educators Toward Female Participation in Nontraditional Programs

Vocational education is part of the solution of the problem of workforce competitiveness (Buzzell, 1993) and is uniquely positioned to prepare students for skilled jobs in today's labor market. However, most vocational occupations remain strongly gender segregated, though there have been countless programs to encourage females to enter nontraditional occupations (Ehrhart & Sandler, 1987). For several decades, females seemed to be the "forgotten half" in vocational education because they have been either prepared for occupations in homemaking or low-pay, dead-end jobs. This ultimately contributes to inappropriate vocational preparation and barriers inhibiting female participation in nontraditional programs who could otherwise benefit from a wide range of high-tech skills that offer long-term employment and higher wages.

Although more and more vocational educators are aware of this serious situation, females still constitute a small minority in male-dominant programs. It seems that females contemplating entering nontraditional programs face numerous barriers, and one of them is gender stereotype (McBride-Bass, 1993). Some research has identified the power of educators' perceptions to make students conform to their perceptions and occupational choices (Snyder, 1988). But a general lack of research exists on vocational educators' perceptions toward female participation in nontraditional programs.

Purpose of the Study and Research Objectives

The purpose of this study was to investigate and compare vocational educators' perceptions toward female participation in nontraditional postsecondry programs. Select variables were examined to determine possible influences on educators' perceptions. Specific research objectives were:

1. To describe vocational educators' perceptions toward female participation in nontraditional programs.

2. To identify the underlying dimensions that comprise vocational educators' perceptions toward female participation in nontraditional programs.

3. To compare differences, if any, in vocational educators' perceptions toward female participation in nontraditional programs based on gender, ethnic group, age, educational level, and current position.

Review of Literature

For decades most American women stayed at home raising their children. Nash (1991) recalled that any American who owned a television set in the 1950s and 1960s would recognize the "typical" American family portrayed on such programs as "Father Knows Best," "Leave it to Beaver," "The Adventures of Ozzie and Harriet," and "The Donna Reed Show." In these prime-time programs, father worked in an office while mother stayed home with two or three children. While this scenario by no means accurately portrayed every American household, it did closely reflect the values and ideals of a majority of women in the country at that time.

The situation has changed markedly over the last 30 years with the gender balance in the workforce expected to shift still further before the end of the century. Initially, social change during the late 1960s and early 1970s, coupled with genuine financial necessity, allowed women to gain a foothold in the business world, essentially redefining their role to include paid employment as a norm rather than an exception (Nash, 1991). Nash forecasted that these trends would persist for the remainder of this century. Thus, between 1985 and 2000, white males, who only a generation ago made up the dominant segment of the labor market, will comprise only 15% of net additions to the U.S. workforce. The majority of new entrants will be women and non-white minorities. By the year 2000, about 47% of the workforce will be comprised of women, while 61% of all American women will be employed (Johnston & Packer, 1987).

Despite their growing visibility in the workplace, women continue to be concentrated, in nearly the same proportion today as in the 1960s, in "traditionally female" occupations such as clerical work, nursing, teaching, food service, library work, retail sales, and domestic work (Nash, 1991). According to the U.S. Department of Labor (1990a), women represented 80% of all administrative support workers (including clerical) in 1989, but only about 9% of all precision production, craft, and repair workers. Women constituted 68% of all retail and personal services, but less than 40% of all executives, managers, and administrators. Statistics indicate that the situation is changing, but very slowly. A scant 9% of working women are in jobs considered nontraditional for their gender (Stenberg & Tuchscherer, 1992).

Most working women are still heavily concentrated in low-paying jobs. The average woman earned about 70 cents for every dollar earned by the average man when 1989 median weekly earnings of full-time wage and salary workers were compared (U.S. Department of Labor, 1990a). Forty-three percent of women workers are currently in jobs that pay below poverty level wages, compared to only 27% of men. It does appear, however, that women's earnings are slowly climbing when compared with men's earnings (U.S. Department of Labor, 1990b). In 1991, according to the U.S. Labor Department's Bureau of Labor Statistics, the ratio of women's-to-men's earnings reached an unprecedented 75%. This may be caused by the continual increase of women's participation in the workforce that patterns men. Another factor may be that women's educational investment and occupational choices are also becoming similar to men's (U.S. Department of Labor, 1990b).

Vocational education is in a unique position to prepare women for various occupations because of its direct link between school and work. However, most vocational occupations remain strongly gender segregated. Burge and Culver (1990) stated:

> Like all other areas of education, vocational education reflects the gender inequities arising from our society. Most of the areas of vocational education are heavily

> gender-typed and, therefore, nontraditional for one gender or the other. Among vocational programs, cosmetology, business, health occupations, and home economics have traditionally been the domain of women; auto mechanics, industrial arts, and agriculture have been perceived as belonging to men. (p. 160)

In fact, in the seven traditional vocational education program areas, six tend to be heavily gender-typed and nontraditional for one gender or the other (Burge & Culver, 1990). Bitters and Foxwell (1990) reported that only 13.1% of female students nationwide were enrolled in vocational programs nontraditional for their gender. Given the critical importance of vocational education to provide females with equal preparation and access to work, it seems that vocational education is not doing an adequate job of facilitating females' entry into all occupations.

Barriers inhibiting female participation in nontraditional programs are complex and interrelated. Vocational educators could restrain females' access to nontraditional programs if they themselves believe vocational opportunities are limited by gender; transmit their gender biases in classrooms, counseling situations, and other activities; ignore or do not implement the 1990 Carl D. Perkins Vocational and Applied Technology Education Act which benefits females; or use gender-biased and stereotyped materials for assessment, guidance, and education. Therefore, negative perceptions of instructors, counselors, and administrators toward female participation in nontraditional programs and their inappropriate treatment of female students can be a major barrier for females contemplating enrolling in nontraditional programs. This can range from subtle discouragement through comments such as "Are you sure?," "This is a male-dominated field," and "Why do you want to choose that major?" to refusal to enroll female students in programs considered nontraditional for their gender. In either case, the end result is to effectively block certain vocational preparation opportunities to females. As Burge and Culver (1990) concluded, the willingness of vocational educators to be innovative in recruitment and retention activities can make a difference in women's lives. Wrightsman and Keaux (1981) pointed out that perceptions and attitudes have been assumed to guide people to adopt different vocational and life roles. In turn, educators' perceptions and attitudes may have significant effects on students' behavior (Harvey & Klein, 1985; Spender & Sarah, 1980). Since vocational educators are involved in providing guidance and education and their influences can greatly shape and promote students' career choices, it is important that the current situation be assessed.

Research Methods

Participants

The target population for this study included all vocational instructors, counselors, and administrators at 2-year postsecondary technical institutes in Georgia. A directory of vocational instructors, counselors, and administrators was obtained from the Georgia Department of Technical and Adult Education. Due to the varying size of each subgroup, different sampling techniques were used. Systematic sampling was used to select a subgroup of vocational instructors at technical institutes in Georgia from a total population of 1,011. According to a formula proposed by Jaeger (1984), the minimum required sample size for a population of 1,000 at a 95% confidence level is 88 individuals. Considering that some instructors might not respond to the survey, the researcher selected 126 vocational instructors for participation. The related populations of counselors (i.e., recruitment, support services, and single-parent programs) and administrators (i.e., director of admissions, vice president of student development services, vice president of instructional services, and division dean) were also included. Three hundred and fifteen questionnaires were sent to representatives of the three identified subgroups, including 126 vocational instructors, 90 counselors, and 99 administrators. Of those mailed, 194 questionnaires were returned which represented a total return rate of 61.58%. Seventy-five out of 126 vocational instructors returned their completed questionnaires accounting for a 59.52% return rate. Forty-nine out of 90 counselors returned questionnaires (54.44%). Seventy out of 99 administrators sent back their questionnaires (70.70%).

Less than half the respondents (43.3%) were female. Among females, less than one-third were administrators. Male administrators accounted for 42.7% of the male respondents. A majority of participants were White (89.6%), while Black respondents accounted for 9.3%. The age range of respondents was 26 to 68 years. The average age of respondents was 46.51 years with a standard deviation of 8.13. Three-fourthS of all respondents were 35 through 55 years of age.

The level of education for respondents ranged from high school diploma to doctorate degree. For those who earned a high school diploma and a 2-year degree, almost all were vocational instructors. In contrast, most administrators held the master's degree or higher, and four-fifths of the administrators held doctoral degrees. The majority of counselors possessed a BA/BS degree or advanced degree.

Approximately 39% of those responding were vocational instructors, 36% were administrators, and the remaining 25% were counselors.

Design and Instrumentation

A survey technique was used to determine the current perceptions of vocational educators at technical institutes in Georgia toward female participation in nontraditional programs. Since a measurement instrument considered adequate for the present study was not available, the instrument was developed by the researchers as a booklet with two sections: (a) perception statements and (b) demographic information.

Section one contained 22 statements which addressed perceptions toward female participation in nontraditional programs. Perception statements were derived from checklists of *Changing roles of men and women: Educating for equity in the workforce* (Nash, 1991) and from literature related to female participation and barriers to female participation in nontraditional programs. Statements included perceptions toward recruitment, enrollment, career information, counseling, teaching materials, instruction, funding, facilities, job opportunity, placement, program appropriateness, and career choice. Perception statements were measured using a 4-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). On this scale, a low score indicated a negative perception toward female participation in nontraditional programs, while a high score represented a positive perception. However, for those items negatively set in this study, low scores represented positive perception when interpreted reversely.

In section two, demographic information was requested for each participant on questions associated with gender, ethnic group, age, educational level, and current position (i.e., instructor, counselor, or administrator).

Procedure

Since sample members were located throughout Georgia, a mailed survey questionnaire was used. The first mailing consisted of a cover letter and questionnaire. To assist participants in accurately completing the questionnaire, directions and definitions of terms were included with each section of the questionnaire. The instrument was pre-addressed and pre-stamped to facilitate returning the completed questionnaire. A follow-up mailing was sent one month later to those not responding to the initial questionnaire. This procedure resulted in a total of 194 usable questionnaires being returned for a response rate of 61.58%.

Since survey research has potential for bias between those who responded and those who did not respond, Whipple and Muffo (1982) suggested a way to check for bias by treating late respondents (those who responded to the second mailing) as "nonrespondents." T-tests were performed on the 22 perception statements to determine if significant differences existed between early respondents (first mailing) and late respondents (second mailing). Results showed that no significant differences were observed. Thus, the chance for nonresponse bias was considered low.

Data Analysis

A combination of descriptive and inferential statistics were used to address stated research objectives. Descriptive statistics were employed to describe vocational educators' perceptions toward female participation in nontraditional programs and to determine their responses (discriminatory, stereotyped, or equitable) to specific situations regarding female participation in nontraditional programs. Factor analysis was used to identify latent dimensions underlying the 22 scale items that measured vocational educators' perceptions toward female participation in nontraditional programs. Multivariate analysis of variance (MANOVA) and analysis of variance (ANOVA) were used to analyze the differences in perceptions among vocational educators based on gender, ethnic group, age, educational level, and current position at 0.05 significance level.

Results

Research Objective 1

Vocational educators' perceptions toward female participation in nontraditional programs. Twenty-two statements were used to describe the perceptions of vocational educators at technical institutes in Georgia toward female participation in nontraditional programs. Generally speaking, vocational educators' perceptions toward female participation in nontraditional programs were quite positive. Though overall mean scores for the 22 individual scale items ranged from a high mean of 3.79 to a low mean of 1.15 (1 = strongly disagree; 4 = strongly agree), all low means were actually items set negatively (items 1, 2, 4, 7, 9, 12, 17, 18, 19, and 21). In that case, low means represent positive perceptions when interpreted reversely. Table 1 displays means and standard deviations for each scale item.

Insert Table 1 about here

Vocational educators strongly agreed that females should be able to enter any vocational programs in which they are interested and capable of completing ($\underline{M}$ = 3.79; SD = .45). They strongly agreed that procedures should be established for describing and communicating to the general community that all vocational programs are available to both females and males ($\underline{M}$ = 3.53; SD = .60). To facilitate females contemplating nontraditional programs, educators agreed that guidance materials (pamphlets, brochures, etc.) which promote female participation in nontraditional programs should be visibly evident in admissions and other relevant offices ($\underline{M}$ = 3.42; SD = .69), and vocational counseling and recruitment materials that are available to students should be free from implications that certain careers are more appropriate or "realistic" for one gender than the other ($\underline{M}$ = 3.48; SD = .60).

Vocational educators strongly disagreed that some vocational programs, like electronics technology, should only enroll males ($\underline{M}$ = 1.15; SD = .37), and they strongly disagreed that females enrolled in programs such as engineering technology, drafting, and industrial maintenance cannot solve problems as well as males ($\underline{M}$ = 1.24; SD = .45). Though vocational educators agreed that sexual harassment has a negative effect on female students who are in nontraditional programs ($\underline{M}$ = 3.18; SD = .69), they disagreed that there is little vocational educators can do to prevent sexual harassment in those programs nontraditional for females ($\underline{M}$ = 1.40; SD = .53).

Vocational educators were not certain about funding for promoting female participation in nontraditional programs. They held moderate perceptions about setting aside promotional money for female participation in nontraditional programs ($\underline{M}$ = 2.59; SD = .87). They were also less certain about job opportunities and better pay for females entering nontraditional programs ($\underline{M}$ = 2.52; SD = .82).

Research Objective 2

The underlying dimensions that comprise vocational educators' perceptions toward female participation in nontraditional programs. The third research question sought to empirically identify underlying issues or themes inherent in vocational educators' perceptions toward female participation in nontraditional programs. Since a pre-existing data structure was not assumed, an exploratory principal components factor analysis with varimax rotation was selected to identify latent dimensions represented among the 22 perception scale items (Dixon, Brown, Engelman, Hill, & Jennrich, 1988).

In a principal components analysis, the first factor represents the combination of variables that accounts for the largest amount of total sample variance; while successive components explain progressively smaller portions of variance (Borg & Gall, 1989; Norusis, 1988). A varimax rotation was used to achieve a simpler data structure by spreading the variance more equally across identified factors and minimizing the number of variables with high factor loadings (Tinsley & Tinsley, 1987).

In this study, a 4-factor solution was adopted for rotation based on established selection criteria (Tinsley & Tinsley, 1987). Only factors with eigenvalues (the sum of squared-factor loadings which indicates a factor's contribution to explaining the common variance underlying all variables) of 1.50 or greater were considered and then corroborated by a scree test. Additional factors identified by this procedure were not selected for rotation as they accounted for extremely small percentages of total variance and were considered residual or error factors. The resulting 4-factor solution accounted for 49.59% of total variance as shown in Table 2.

Insert Table 2 about here

In order to facilitate the analysis of factors in one direction, items 1, 2, 4, 7, 9, 12, 17, 18, 19, and 21 which were negatively set were recoded before factor analysis. A conservative criterion loading of .40 was used to determine whether scale items were included on a given factor. This cut-off loading was more stringent than the typical value of .30 and was arbitrarily selected to ensure a greater degree of confidence in the factor loadings. A criterion loading of .40 indicates that approximately 15% of the variance in a given variable is explained by that factor (Tinsley & Tinsley, 1987). As a result, only one item on Factor 4 did not meet the criterion cut-off and was not considered when identifying and naming each factor.

Nine items pertaining to the viability of promoting female participation in nontraditional programs were loaded on Factor 1. Positive responses on this factor indicated that female participation in nontraditional programs should be promoted using different strategies such as recruitment effort, guidance materials in admissions offices, counselors' encouragement, special funding, teaching materials, separate facilities, and focused efforts in placement. This factor accounted for 16.55% of the data variance and was entitled Promotion of Females in Nontraditional Programs. Higher scores revealed a general agreement for promoting females in nontraditional programs.

Factor 2 consisted of six items that described individual vocational educator's perceptions toward females in nontraditional programs and their perceived roles in those programs. This factor which accounted for 14.77% of the variance was named Perceived Educators' Role in Nontraditional Programs. An underlying theme here involved whether vocational educators should hold the same expectations, provide identical learning activities and instruction efforts to both males and females, and whether vocational educators can help prevent sexual harassment in those programs nontraditional for females.

Four items which loaded on Factor 3 focused attention on female enrollment in nontraditional programs. Issues within this factor included whether females should be enrolled in nontraditional programs, whether there should be a definite male and female role separation in vocational programs, and whether career choice is as important for females as for males. This dimension was labeled Female Enrollment in Nontraditional Programs and accounted for 11.32% of the variance.

The fourth identified factor consisted of three items which focused on barriers that vocational educators perceived when females enter nontraditional programs or in their future careers. This factor was designated Barriers for Females Entering the Male's World and explained 6.95% of the total variance in the data.

Research Objective 3

The influence of select variables (gender, ethnic group, age, educational level, and current position) on vocational educators' perceptions toward female participation in nontraditional programs. The four identified perception factors were used as dependent variables in a MANOVA. The influence of five select independent variables (gender, ethnic group, age, educational level, and current position) were examined. MANOVA was followed by a post hoc univariate ANOVA for each independent variable showing statistical significance as shown in Table 3.

Insert Table 3 about here

A Bonferroni post hoc correction was used with each univariate test to control for experiment-wise error rate of univariate follow-ups and was accomplished by dividing the established level of significance by the number of univariate tests performed (Haase & Ellis, 1987). Due to the possible effects of sample size on determining statistically significant results, composite mean and standard deviation scores for each factor are provided to allow the reader to determine if statistically significant differences are also of practical significance as shown in Table 4.

Results of the MANOVA revealed that variables of gender and current position selected for analysis generated significant differences on one or more of the four perception factor scores. Race, age, and educational level had no significant impact on vocational educators' perceptions toward female participation in nontraditional programs. The impact of gender and current position on the four factors is examined in subsequent paragraphs.

Factor 1: Promotion of females in nontraditional programs. Post hoc analysis revealed that two independent variables--gender and current position--significantly influenced perceptions on this factor. Female educators surveyed were more positive than male educators toward promoting female participation in nontraditional programs through different strategies such as recruitment effort, guidance materials in relevant offices, counselors' encouragement, special funding, teaching materials, separate facilities, and efforts in placement. Counselors who participated in this study were more likely to promote females entering nontraditional programs than administrators and instructors. At the same time, administrators were more likely to encourage females to enter nontraditional programs than instructors.

Factor 2: Perceived educators' role in nontraditional programs. The second factor considered the role of vocational educators in nontraditional programs. Followup ANOVA results showed that gender was the only variable to have a significant impact on this perception factor. Female respondents were more likely to possess the same expectations for both male and female students, take the same actions in class instruction, and view prevention of sexual harassment as a role of vocational educators. Male respondents, in general, were less likely to understand the vocational educators' role in nontraditional programs.

Factor 3: Female enrollment in nontraditional programs. Two variables made a significant impact on educators' perceptions of female enrollment in nontraditional programs. Data revealed that female respondents were more positive than male respondents on issues of whether females should be enrolled in nontraditional programs, whether there should be a definite male and female role separation in vocational programs, and whether career choice was as important for females as for males. An examination of responses by instructors, counselors, and administrators revealed that counselors were significantly more positive than instructors toward female enrollment in nontraditional programs. Results also indicated that instructors were less positive than administrators on these issues.

Factor 4: Barriers for females entering the male's world. The last factor that described educators' perceptions was concerned with barriers that vocational educators perceived when females enter nontraditional programs or in their future careers. Two variables significantly influenced factor four scores including gender and current position. A post hoc univariate ANOVA revealed that female educators were more likely to perceive barriers for females entering the male's world. Instructors were less likely to perceive those barriers than counselors and administrators.

Discussion

For the past two decades, significant efforts have been made to eliminate gender discrimination and gender stereotyping in vocational education. Since Title IX of the Educational Amendments of 1972, the federal government has been promoting gender equity, thus insuring opportunities for education which had previously been denied to people because of their gender.

Nevertheless, the overall status for females in nontraditional programs remains relatively low (Burge & Culver, 1990) despite great efforts to change and create a more favorable environment for females. Vocational educators sometimes have gender stereotyping attitudes and behaviors without these individuals even being cognizant of their detrimental effect. These have contributed to difficulties experienced by females who are either enrolled or are contemplating enrolling in nontraditional programs.

Gender equity is a topic frequently in the news (Plawin, 1993); however, little is known about vocational educators' perceptions toward female participation in nontraditional programs. The present study was a first step to develop empirical measures of vocational educators' perceptions toward female participation in nontraditional programs. As such, the study's purpose was exploratory, providing an assessment of perceptions.

Findings provide a picture of vocational educators' perceptions toward female participation in nontraditional programs. Overall, perceptions of vocational educators at technical institutes in Georgia toward female participation in nontraditional programs was quite positive, as measured by their responses to 22 perception statements. Vocational educators surveyed generally believed that females should be able to enter any vocational programs in which they are interested and capable of completing, and females enrolled in programs such as engineering technology, drafting, and industrial maintenance can solve problems as well as males. This finding does not support the historical belief that there should be definite male and female occupational separation in vocational programs (Hollenback, 1985). It did demonstrate a change in educators' perceptions from an early study by Harrison (1979) who found that vocational educators were reluctant to have females in nontraditional programs. Part of the reason for changes from the past decades to the present might include federal regulations, social influence, gender equity workshops and inservice training, and the fact that more females are entering the workforce.

However, some vocational educators had a different opinion when discussing funding. One-fifth of the educators expressed that money set aside for promoting female participation in nontraditional programs should be cut without any objection when the budgets are tight or money set aside is not necessary, since most females entering nontraditional programs usually drop out.

Since this study sought a broad overview of vocational educators' perceptions, an exploratory factor analysis was conducted to determine if underlying dimensions which represented vocational educators' perceptions could be identified. The analysis revealed that vocational educators may form perceptions based on four discrete factors including promotion of females in nontraditional programs, perceived educators' role in nontraditional programs, female enrollment in nontraditional programs, and barriers for females entering the male's world. Future work in this area may expand and clarify these preliminary factors. In any event, it appears that vocational educators' perceptions toward female participation in nontraditional programs is a multidimensional construct.

The impact of select variables on vocational educators' perceptions was also examined in the study. Gender had an impact on all four identified factors. Female educators reported more positive perceptions toward female participation in nontraditional programs than did their male counterparts. This finding supported and extended the work of past researchers (Cunningham, Martin, & Miller, 1982; Lasonen, Burge, & Finch, 1990) who found that male vocational educators had more traditional attitudes than female counterparts, and that female educators held more egalitarian gender-role attitudes than male educators. However, the finding also demonstrated a great improvement in male educators' perceptions toward females from previous studies (Dittman, 1976; Hantijis, 1977; Hollenback, 1984; Manrow, 1978). Male educators today seem more positive toward females in nontraditional programs and in their future careers than ever before.

On the other hand, there were not significant differences in perceptions among vocational educators based on ethnic group, age, and educational level. This did not support Lasonen et al.'s findings (1990) which indicated younger educators were less traditional than older educators, and a higher educational level promoted egalitarian gender-role attitudes. Part of the reason for this finding might be that the average age of respondents in this study was 46.51 years, which may have contributed to less differentiated perceptions. Furthermore, since only 12% of respondents possessed a degree lower than BA/BS, there was also limited diversity among educational levels. As for the ethnic group, no test for differences was attempted because of the homogeneity of race of the respondents in the study.

Current position played a significant role in vocational educators' perceptions with the exception of Factor 2--the perceived educators' role in nontraditional programs. Counselors were more likely than administrators and instructors to promote females entering nontraditional programs, more positive toward female enrollment in nontraditional programs, and more likely to perceive barriers for females entering the male's world. At the same time, instructors appeared to be less likely to encourage females entering nontraditional programs, less positive toward female enrollment in nontraditional programs, and less likely to perceive barriers for females entering the male's world.

Results of this study extend our understanding of how vocational educators perceive female participation in nontraditional programs. The determination that vocational educators' perceptions may be a multidimensional construct, as opposed to unidimensional, may provide a clearer explanation of the relationship between educators' perceptions; their treatment of female students concerning enrollment, counseling, feedback, instruction, and placement; and their perceptions' impact on female students' perceptions and occupational choices.

Future research should focus on the perceptions of vocational instructors in nontraditional programs toward female participation in their programs, the connection of vocational instructors' perceptions and behavior toward female participation in nontraditional programs, and feelings of female students in nontraditional programs regarding vocational instructors' treatment toward them, as these would greatly affect female students' involvement in tech-prep and school-to-work transition.

Changes in composition of the workforce in combination with changes in labor market needs provide new challenges for vocational educators. Vocational educators need to help students develop a perception that they can reach their full potential and become successful regardless of gender (McBride-Bass, 1993). Vocational educators should continue their efforts to eliminate gender stereotyping related to occupational decision making and to emphasize the importance of considering nontraditional career choices for females since they will be the largest group of new entrants to the workforce in the near future. Vocational educators should also encourage females to be actively involved in tech-prep as it will provide them a pathway to many high-tech, nontraditional careers.

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Table 1

Descriptive Statistical Summary of Vocational Educators' Perceptions

Item No.	Item Statement	M	SD
1.	Some vocational programs, like electronics technology, should only enroll males.	1.15	0.37
2.	Career choice is not as important for females as for males.	1.16	0.44
3.	Females entering vocational programs nontraditional for their gender will have more job opportunities and better pay than those entering traditional programs.	2.52	0.82
4.	Vocational educators should attempt to maintain a definite male and female role separation in vocational programs.	1.28	0.50
5.	Money should be set aside in my school's budget for promoting female participation in vocational programs nontraditional for their gender.	2.59	0.87
6.	Females should be able to enter any vocational programs in which they are interested and capable of completing.	3.79	0.45
7.	I doubt that I will provide the same learning activities and projects for females in vocational programs nontraditional for their gender.	1.30	0.54
8.	The course content of male dominated occupations should include projects and examples that acknowledge the presence of females in the field.	3.07	0.93
9.	Females enrolled in programs such as engineering technology, drafting, and industrial maintenance cannot solve problems as well as males.	1.24	0.45
10.	Guidance materials (pamphlets, brochures, etc.) that promote female participation in vocational programs nontraditional for their gender should be visibly evident in the admission and other relevant offices.	3.42	0.69
11.	Separate facilities such as locker rooms and restrooms should be available for females who are enrolled in vocational programs nontraditional for their gender.	3.41	0.62
12.	There is little vocational educators can do to prevent sexual harssment in those programs nontraditional for females.	1.40	0.53
13.	Vocational educators need to make employers aware of gender bias/gender stereotyping/gender discrimination in hiring practices.	3.02	0.82
14.	The impact of gender biased teaching materials should be minimized through class discussion.	3.25	0.72
15.	Vocational counseling and recruitment materials that are available to students should be free from implications that certain careers are more appropriate or "realistic" for one gender than the other.	3.48	0.60
16.	Vocational counselors have special responsibilities to encourage females to consider enrollment in vocational programs nontraditional for their gender.	2.98	0.83
17.	Few females have the fortitude and ability to compete in a male's world.	1.48	0.69

(table continues)

Item No.	Item Statement	M	SD
18.	It's difficult for vocational educators to convey the same expectations to female and male students in vocational programs.	1.66	0.63
19.	Females are not physically capable of working in all occupations.	2.22	0.83
20.	Sexual harassment has a negative effect on female students who are in vocational programs nontraditional for their gender.	3.18	0.69
21.	Female students would be a burden to vocational instructors if they enrolled in vocational programs nontraditional for their gender.	1.49	0.60
22.	Vocational programs should establish procedures for describing and communicating to the general community the fact that all vocational programs are available to both females and males.	3.53	0.60

Note. Respondents were asked to rate each research statement using a 4-point Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree).

Table 2

Varimax-Related Factor Loading Matrix for Principal Components Analyses of Vocational Educators' Perceptions

	Factors[a]				
Items	1	2	3	4	h^2
10	.703(.49)[b]	.228(.05)	.168(.03)	.009(.00)	.57
16	.701(.49)[b]	.010(.00)	.235(.06)	.250(.06)	.61
5	.669(.45)[b]	-.101(.01)	.088(.01)	.083(.01)	.48
14	.614(.38)[b]	.115(.01)	.092(.01)	.221(.05)	.45
8	.568(.32)[b]	.186(.03)	.094(.01)	.004(.00)	.36
22	.548(.30)[b]	.141(.02)	.096(.01)	.244(.06)	.39
11	.538(.29)[b]	.339(.11)	.084(.01)	-.414(.17)	.58
13	.496(.25)[b]	.077(.01)	.130(.02)	.147(.02)	.30
19	.447(.20)[b]	.433(.19)	-.022(.00)	.143(.02)	.41
18	.017(.00)	.738(.54)[b]	.066(.00)	.030(.00)	.54
12	.104(.01)	.685(.47)[b]	.231(.05)	.054(.00)	.53
7	.084(.01)	.679(.46)[b]	.058(.00)	.080(.01)	.48
21	.271(.07)	.658(.43)[b]	.268(.07)	.033(.00)	.57
9	.101(.01)	.575(.33)[b]	.339(.11)	.073(.01)	.46
15	.371(.14)	.448(.20)[b]	.394(.16)	.284(.08)	.58
1	.104(.01)	.160(.03)	.807(.65)[b]	.205(.04)	.73
2	.201(.04)	.095(.01)	.744(.55)[b]	-.051(.00)	.60
6	.178(.03)	.283(.08)	.654(.43)[b]	-.055(.00)	.54
4	.161(.03)	.368(.14)	.539(.29)[b]	.271(.07)	.53
20	.219(.05)	.163(.03)	.055(.00)	.671(.45)[b]	.53
17	.239(.06)	.315(.10)	.053(.00)	.618(.38)[b]	.54
3	.091(.01)	.051(.00)	.153(.02)	.323(.10)	.13
Eigenvalue	3.64	3.25	2.49	1.53	10.91
% of total variance	16.55	14.77	11.32	6.95	49.59
% of trace	33.36	29.79	22.82	14.02	100.00

Note: Numbers in parentheses are the squares of each factor loading.

[a] Factor names are: 1 = Promotion of Females; 2 = Perceived Educators' Role; 3 = Female Enrollment; 4 = Barriers for Females.

[b] Only factor loadings > .40 were used to name factors.

Table 3

Sequential Multivariate Analysis of Variance of Vocational Educators' Perceptions

	Multivariate Tests (MANOVA)				Univariate Tests (ANOVA)				
Source	Wilk's Lambda	F	Num df	Den	df	Promotion (Factor 1)	Edct Role (Factor 2)	Enroll (Factor 3)	Barrier (Factor 4)
Gender	0.84	8.97	4	189***	1	19.58***	22.17***	11.72***	21.11***
Race	0.05	2.34	4	186	--	--	--	--	--
Age	0.91	1.42	12	477	--	--	--	--	--
Education	0.88	1.20	20	595	--	--	--	--	--
Position	0.86	3.77	8	376***	2	13.49***	2.00	4.34*	5.56**

*$p < .05$
**$p < .01$
***$p < .001$

Note: For race, the American Indian group and Asian/Pacific group were deleted because of small numbers. The age group under 25 was also deleted as no respondent was identified in this group. The "other" category in educational level was omitted because of small numbers.

Table 4

Descriptive Statistics for Factors Derived from Educators' Perceptions

Variables	n	Promotion[a] (Factor 1) M (SD)	Edct Role[b] (Factor 2) M (SD)	Enroll[c] (Factor 3) M (SD)	Barrier[d] (Factor 4) M (SD)
Gender[f]					
Female	84	29.49(3.6)	22.21(1.8)	15.56(0.9)	9.69(1.3)
Male	110	26.70(4.9)	20.65(2.6)	14.92(1.5)	8.75(1.5)
Race*					
White	173	27.64(4.6)	21.28(2.5)	15.17(1.4)	9.20(1.4)
Black	18	30.67(3.4)	22.06(1.8)	15.56(0.9)	9.17(2.0)
American Indian	1	29.00(0.0)	22.00(0.0)	15.00(0.0)	8.00(0.0)
Asian/Pacific	1	25.00(0.0)	18.00(0.0)	15.00(0.0)	7.00(0.0)
Age**					
25-34	16	27.25(3.9)	21.44(2.1)	14.69(1.6)	9.44(1.5)
35-44	57	27.47(4.9)	21.39(2.3)	15.42(1.0)	9.16(1.2)
44-55	86	28.44(4.8)	21.58(2.4)	15.22(1.2)	9.14(1.7)
Over 55	28	27.46(3.4)	20.36(2.8)	14.86(1.8)	9.14(1.3)
Education					
High School Diploma	11	25.45(5.4)	21.82(2.3)	14.91(1.8)	8.55(1.7)
2-year Degree	12	27.33(4.2)	20.17(1.9)	14.75(1.4)	8.58(2.3)
BA/BS	28	28.86(4.7)	21.61(2.4)	15.36(1.5)	9.39(1.2)
MA/MS/MED	68	28.53(3.9)	21.29(2.3)	15.28(1.2)	9.15(1.2)
Ed.S	40	27.50(4.5)	21.53(2.5)	15.35(1.2)	8.98(1.7)
Ph.D/Ed.D	29	28.10(5.5)	21.72(2.6)	15.28(1.3)	9.76(1.5)
Others	6	23.83(2.8)	18.50(2.0)	13.50(1.4)	8.67(1.5)

(table continues)

Variables	n	Factor Scores: Promotion[a] (Factor 1) M (SD)	Edct Role[b] (Factor 2) M (SD)	Enroll[c] (Factor 3) M (SD)	Barrier[d] (Factor 4) M (SD)
Position					
Instructor	75	26.03(4.4)	20.92(2.4)	14.88(1.6)	8.73(1.5)
Counselor	49	29.96(3.2)	21.78(1.9)	15.57(0.9)	9.57(1.3)
Administrator	70	28.49(4.7)	21.44(2.7)	15.27(1.3)	9.31(1.5)

[a] Factor 1 scores represent a cumulative mean score based on individual responses to nine scale items using a 4-point Likert type scale (range 9-32).

[b] Factor 2 scores represent a cumulative mean score based on individual responses to six scale items using a 4-point Likert type scale (range 6-24).

[c] Factor 3 scores represent a cumulative mean score based on individual responses to four scale items using a 4-point Likert type scale (range 4-16).

[d] Factor 4 scores represent a cumulative mean score based on individual responses to three scale items using a 4-point Likert type scale (range 3-12).

•Missing Observation = 1

••Missing Observation = 7

A COMPARISON OF THE EDUCATIONAL PHILOSOPHIES OF TRAINING AND DEVELOPMENT PROFESSORS, LEADERS, AND PRACTITIONERS[1]

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Every educational endeavor involves decision-making. Educators have the responsibility of deciding who should be taught, what should be taught, how it should be taught, and for what purpose. Such decisions are typically based upon the educator's knowledge and understanding of the issue under consideration and upon related educational theory. Fitzgibbons (1981) asserted that educators must also base these decisions on their beliefs.

Beliefs are statements about what one regards as true and factual and are expressed in a descriptive dimension. However, beliefs can be influenced by values and attitudes. Values have to do with what a person considers to be good or desirable, and attitudes are expressions of what a person likes or dislikes (Apps, 1973). Values and attitudes enable beliefs to take on an evaluative dimension, which establishes the basis for the role of beliefs in decision-making.

According to Apps (1973), beliefs are obtained primarily from two sources: (a) from what one has experienced and (b) from an authority. Thus, educators can reflect on their experience in an educational practice and on authoritative philosophical statements from professors, leaders, and the literature of their field in order to clarify their own beliefs. They will then be in a better position to make "intelligent, fully informed" decisions (Fitzgibbons, 1981, p. 8).

Apps (1973) recommended that educators prepare for decision-making by identifying, analyzing, and classifying their beliefs about education and their particular field of educational practice. He called this process "developing a working philosophy" (p. 7) and defined it as a search for principles regarding the basic elements of education.

Similarly, as fields of education mature, their leaders and thinkers develop theoretical and philosophical statements regarding the basic elements of educational practice in the particular field and document these theories and philosophies in the literature of the field. For instance, in the area of Adult Education, there is considerable writing which links the field's current practice with established philosophies that influence current practice. One example is the classic text Philosophical Foundations of Adult Education (Elias & Merriam, 1980), which links the field's practice with five established philosophies: Liberal Adult Education, Progressive Adult Education, Humanistic Adult Education, Behavioristic Adult Education, and Radical Adult Education. Such literature provides models of philosophical beliefs with which adult educators can agree or disagree, and in the process of agreeing or disagreeing, they are able to clarify their personal beliefs.

However, within the literature of Training and Development—a newer educational field—no similar linkage of practice to the established philosophies has been undertaken.

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Obviously, practitioners in this field have been able to function without the benefit of a wealth of philosophical material specific to their work, but the absence of philosophical writing in the literature of Training and Development presents a problem for the field. As a relatively young field of practice, it needs to develop theoretical and philosophical foundations similar to those that have been formulated for the older fields of educational practice and have been necessary to establish their credibility. These foundations should then be reflected in the literature of the field—along with the practical concerns—to help the field mature into a profession that operates from a strong theoretical base.

The lack of philosophical writing in the literature of Training and Development also presents a problem for practitioners. The literature of any field represents what its leaders and thinkers believe is important and should be communicated to practitioners. It follows that the lack of philosophical writing for the field of Training and Development may imply that philosophy specific to the field is not a current topic of interest. Or, the lack of philosophical writing may indicate that the field is still so young and relatively undifferentiated from Adult Education that the philosophies of Adult Education are considered adequate for Training and Development, and there is no compelling need at this time for unique philosophies of Training and Development. In either case, because there are no documented philosophies in the literature of the field, practitioners lose the benefit of one of the potential authoritative sources of philosophical beliefs. The only source for their beliefs is their own experience, and their only basis for decision-making is "the scientific examination of 'what is' or the pragmatic assessment of 'what works'" (Shelton, cited in Zinn, 1983, p. 25).

It is apparent that the field of Training and Development can benefit from the documentation of its philosophical foundations. This study took a first step toward the development of such documentation—the identification of the philosophies that Training and Development professionals believe best represent current practice in their field. The process of identifying and subsequently reporting these philosophies could potentially stimulate further interest and discussion and the documentation of the philosophical findings in the field's literature.

RESEARCH OBJECTIVES

The primary objective for this study was to determine the predominant educational philosophy or philosophies for the field of Training and Development as identified by three groups of professionals in the field: (a) professors in Training and Development degree programs, (b) leaders, and (c) practitioners. A secondary objective was to determine whether a difference exists between the predominant philosophy expressed by practitioners who have education degrees and practitioners with degrees in other fields. The final objective was to determine whether there were differences in the professionals' preference toward each of the five philosophies according to: (a) their professional group, (b) age, (c) gender, (d) highest degree earned, and (e) college major.

METHODOLOGY

Research Design

The mail survey method was selected as the most expedient means of collecting data from a large number of professors, leaders, and practitioners. Surveys provide an efficient method for gathering information about the prevalence of attitudes, preferences, and beliefs among individuals and between subgroups (Weisberg, Krosnick, & Bowen, 1989). Also, considering the relatively abstract nature of philosophical thought, the survey technique—using an instrument with multiple-choice responses—was expected to yield more concrete findings.

Instrumentation

The first criterion for an instrument to be used in this survey was that it should address philosophical issues appropriate to the field of Training and Development. The second criterion was that it should consist of "closed form" items (Borg & Gall, 1989, p. 428), which permit a limited range of responses. The alternatives offered in a typical multiple-choice item restrict the range of responses and channel responses to the desired framework (Dutka, Frankel, & Roshwalb, 1981). Items designed in the closed form were also desirable for this survey because they could be efficiently quantified and analyzed statistically.

After a review of four instruments, The Philosophy of Adult Education Inventory (Zinn, 1983) was selected. Developed to provide individuals with an instrument for identifying their personal philosophies of Adult Education, it measures their individual preferences for the five established philosophies presented by Elias and Merriam (1980) in their textbook Philosophical Foundations of Adult Education.

The inventory consists of 15 items related to the practice of Adult Education. The items begin with a sentence stem that is followed by five optional phrases, each reflecting one of the five philosophies. For each phrase, a Likert scale of 1 - 7 is provided. Respondents are instructed to circle the number that most closely indicates their level of agreement with the phrase, with 1 representing strong disagreement and 7 representing strong agreement. The inventory is scored by adding the circled numbers according to a coded system designed to calculate total scores for each of the philosophies. With a possible range of scores from 15 to 105, a score of 95-105 indicates a strong agreement with a given philosophy; a score of 15-25 indicates a strong disagreement with a given philosphy; and a score between 55 and 65 indicates neither agreement or disagreement.

This instrument was selected for the survey because of the assumption that Training and Development, as a subfield of Adult Education, is reflective of the same foundational philosophies as Adult Education. The Philosophy of Adult Education Inventory, therefore, provides the most relevant categories for consideration in this study, although training is not the specific focus of the items.

Furthermore, Zinn (1983) conducted rigorous validity and reliability testing on the instrument. She reported that content validity was established by a jury of six experts.

The instrument was considered to have a fairly high degree of validity based on the jury mean scores, and construct validity was established through factor analysis. Although Zinn did not report statistical analysis of overall instrument reliability, she stated that the reliability on the subscales ranged from .75 to .86 and that the instrument was judged to have a moderate to high degree of reliability.

The Population and Sample

The initial population for this study consisted of the three following groups selected from the membership of the American Society for Training and Development (ASTD): (a) HRD Professors (638 members), (b) Chief Training Officers (3,702 members), (c) Specialists, Coordinators, and Trainers (5,422 members). Members are placed in these groups by ASTD because they have selected the particular category on the membership application form. The total population size for this study, therefore, was 9,762 (B. Holmes, Executive Assistant to the Senior Vice President for Membership Development of ASTD, personal communication, March 31, 1993). The population was selected from the membership of ASTD because the researcher believed that membership in the professional association for the field demonstrates a measure of commitment to the field and that the members would have more interest in supporting this research than Training and Development professionals who have not chosen to associate themselves with the professional organization.

Although stratified random sampling of the entire population was considered, the HRD Professors group was determined to be too small to provide a representative sample. Therefore, the decision was made to treat each group as a separate population, and the statistical findings of this study must be considered generalizable only to these three populations.

Sample size was determined from a table provided by Oliver and Hinkle (1983) for sampling multiple populations. To detect differences between the three groups larger than .50 standard deviations with a desired power of .90 and level of significance at .05, the sample size recommended for each population was 101. However, to increase the probability of obtaining the number needed in each group, the sample size was increased to 150 each for the Professor and Leader groups and 200 for the Practitioner group.

Mailing lists for each of the groups of Professors, Leaders, and Practitioners were made available from ASTD in the form of electronic databases. Systematic random selection of 150 names from the Leader database and 200 names from the Practitioner database was conducted electronically. However, for the Professor population, the sample selection was purposive to ensure that individuals selected were truly associated with a university or college.

Data Collection and Analysis

In the first mailing, a survey packet was sent to each member in the study. Between 36% and 47% of each group responded to the first mailing. A second mailing was sent out to non-responders of the first mailing and resulted in a response of 19-20%

for each group. An additional 8-12% for each group responded to the third and final mailing.

Of the three groups, the Professors had the highest response rate (74.67%). The Practitioners had the next highest rate (67.50%), and the Leaders had the lowest rate (64.67%). Overall, 344 responses were received from the 500 professionals to whom the surveys were sent, resulting in a response rate of 68.80%.

Overall instrumental reliability and reliability of the subscales were computed using Cronbach's alpha. The overall reliability of the instrument, .9425, was high. The reliability of the subscales ranged from .8047 to .8780. The instrument was considered to be reliable.

Data analysis included the following procedures:

1) Descriptive statistics on the demographic data for the three samples were computed.

2) The philosophical preference scores were calculated for each respondent for each of the five philosophies according to the instructions for scoring the inventory provided by Zinn (1983). The scores were then ranked to determine the predominant philosophical preference of each respondent. The highest score of the five philosophical preference scores was considered the respondent's predominant philosophical preference. Frequencies and means of the predominant philosophical preference scores for each professional group were then calculated.

3) One-way ANOVAs were then conducted using the means for the five dependent variables broken out by the five independent variables: (a) professional group, (b) age, (c) gender, (d) highest degree earned, and (e) college major.

FINDINGS

The most predominant philosophical preference for the Professors and Leaders (46.30% and 52.13% respectively) was Progressivism. The second most preferred philosophy for both groups (25.00% of the Professors and 31.91% of the Leaders) was Behaviorism. The trend was reversed with the Practitioners. Behaviorism was the preferred philosophy (45.00%) and was followed by Progressivism (38.53%). Radicalism was the least preferred in all three groups. The frequency counts and percentages are presented in Table 1.

The calculation of the frequencies was complicated by the fact that 28 respondents' scores indicated multiple predominant preferences—that is, their highest scores were ties and fell into two or three categories. Also, casual observation of the individual scores indicated that many respondents had relatively narrow ranges between their highest and lowest scores. It was decided that simple frequency counts of the predominant scores did not completely describe the data. Thus, to show the relative strength of all the philosophical preferences for the three groups, the means and ranges of the five philosophical preference scores for each of the groups were calculated and compared among the groups. See Table 2.

Table 1

Frequencies and Percentages of Single Predominant Philosophical Preference Scores of Professors, Leaders, and Practitioners

Philosophical	Group							
	Prof.		Lead.		Pract.		Total	
Preference	n	%	n	%	n	%	n	%
Liberal	11	10.19	3	3.19	5	4.59	19	6.11
Progressive	50	46.30	49	52.13	42	38.53	141	45.34
Behaviorist	27	25.00	30	31.91	49	45.01	106	34.08
Humanistic	17	15.74	12	12.77	12	11.01	41	13.18
Radical	3	2.78	0	0.00	1	0.92	4	1.29

Table 2

Ranges and Means of the Philosophical Preference Scores by Group

		Philosophical Preference				
		Lib.	Prog.	Beh.	Hum.	Rad.
Group	Range	M	M	M	M	M
Professors	14.96	72.37	83.33	78.90	76.09	68.37
Leaders	13.81	69.16	82.97	79.66	74.62	62.47
Practitioners	19.93	70.68	80.86	81.47	73.15	61.54
Overall	18.21	70.78	82.36	80.05	74.62	64.15

Although the Professors and Leaders scored the highest for Progressivism (M = 83.33 and 82.97 respectively), they also showed a relatively strong preference for Behaviorism (M = 78.90 and 79.66 respectively), with the other philosophies trailing behind. The Practitioners, on the other hand, scored highest for Behaviorism (M = 81.47), but also indicated a relatively strong preference for Progressivism (M = 80.86). It should be noted that all three groups identified Humanism, Liberalism, and Radicalism as their third, fourth, and fifth preferences in that order.

Since the ranges were 14.96 points for the Professors, 13.81 for the Leaders, and 19.93 for the Practitioners, the scoring patterns for all of the groups could be described as eclectic. It should also be noted that, according to Zinn's (1983) scoring interpretation, most of the respondents' scores fall between the neutral range (55 - 65) and the strong agreement range (95-105).

No significant difference was found between the predominant philosophies expressed by Practitioners with education degrees and Practitioners without education degrees. Nor were there significant differences in Training and Development professionals' preferences toward Liberalism, Behaviorism, and Humanism.

Statistically significant differences were found for Progressivism for the college major variable (F = 5.64, df = 1, p = .02). Respondents with education majors more strongly preferred the Progressive philosophy than did the non-education majors.

Significant differences were also found for Radicalism for the following variables:

(a) group (F = 8.89, df = 2, p = .01), with post hoc analysis revealing that Professors have a strong preference for Radicalism than Leaders and Practitioners,

(b) gender (F = 3.79, df = 1, p = .05), with females having a stronger preference for the Radical philosophy than males,

(c) highest degree (F = 6.57, df = 3, p = .01), with post hoc analysis indicating that respondents who have doctoral degrees expressed stronger preference for Radicalism than did those with bachelor's degrees, and

(d) college major (F = 10.44, df = 1, p = .01), with respondents having education degrees showing a stronger preference for the Radical philosophy than respondents without education degrees.

DISCUSSION

To provide a baseline for this study, it was assumed that, since Training and Development is a subfield of Adult Education, the philosophies for Adult Education could serve as philosophies for Training and Development. The literature of the broader field of Adult Education could, therefore, be expected to provide further illumination regarding the findings of this study. Indeed, three sources—a research study (McKenzie, 1985), the Elias and Merriam text (1980), and a journal article (Podeschi, 1986)—indicate their support for the relative high prominence of the Progressive and Behavioristic philosophies and lesser prominence for the other three philosophies.

Two points should be noted about the predominant preferences. First, in regard to the relative prevalence of the Progressive and Behaviorist philosophies, it was found that Professors and Leaders preferred Progressivism followed by Behaviorism, whereas the

Practitioners reversed the order by preferring Behaviorism followed by Progressivism. This reversal does not imply that there is—or should be—a competition between the two philosophies with Progressivism winning in the one case and Behaviorism winning in the other. The fact that all three groups gave so much support to both philosophies should imply that both philosophies are perceived as vital to the field. The reversal probably does imply, however, a difference in focus of the three groups, and from this perspective, it seems to have a simple explanation.

Behaviorism is typically characterized in terms of its methodology, which includes the use of behavioral objectives, practice, feedback, and reinforcement. Progressivism is perhaps characterized more by its purposes—the transmission of practical knowledge and skills as well as culture and societal structure. Thus, it makes sense that the Practitioners, who instruct students regularly and are, therefore, concerned with performance issues on a daily basis, placed a higher priority on the philosophy that emphasizes methods and behavioral change. Similarly, it makes sense that the Professors and Leaders, who guide the field and would be expected to be more concerned with broader issues, indicated a higher preference for the philosophy that focuses on utilitarian and societal purposes and values.

Second, the findings of eclectic patterns in the scoring of the philosophies by each of the three groups is also supported by this study's literature review. As Howick (1971) suggested, "well-developed systems of philosophy aim toward purity, but most individual men in thought and practice tend to be eclectic" (pg. 3). Elias and Merriam made it clear by the title and organization of their book that several philosophies provide the foundation for Adult Education. It follows that Training and Development may reflect several philosophies also. Certainly the diversity of learning needs and learners in the workplace should require consideration of several philosophical approaches, at least in specific aspects if not in their entirety. Eclectic preferences for the individual philosophies expressed in this study can, furthermore, be viewed as a reflection of the diversity and pluralism present in our American culture.

The second research objective concerned the existence of philosophical differences between practitioners with education degrees and practitioners without education degrees. It was thought that significant findings could be linked to the formal study of philosophy that is typically required in education degree programs. The findings could also potentially shed some light on the differences in educational background and orientation of HRD practitioners and adult educators which have been the subject of debate for several decades. The "tension" between these two groups is similar to the possible "tension" between practitioners without educational backgrounds and practitioners with educational backgrounds. According to Gilley and Eggland (1989),

> Practitioners in each field, HRD and adult education, continue to view their professions as separate disciplines built on different bodies of knowledge, approaches, and methodologies....This has prevented an open exchange of ideas and information regarding adult learning theory, program and curriculum design, classroom methodologies, and other approaches to enhancing adult learning and change. (p. 17)

The authors proceeded with the following comparison of the two orientations:

> Adult education programs are established to advance or increase knowledge level, competence, or skills, and the individual participants are the main beneficiaries. Human resource development programs have the same purpose....However, HRD programs are established primarily for the benefit of the organizations that sponsor and support them, rather than the individual participants. This is a simple and often overlooked difference, but it is the major reason for the separation—both attitudinal and physical—between the two fields, and its emphasis has meant the neglect of an obvious and major similarity: Adult educators and HRD practitioners are all in the business of advancing the skills and increasing the knowledge and improving the behavior of adults, whoever the intended beneficiary might be. (p. 17)

In view of this debate, the finding of no statistical difference between practitioners with and without education degrees is important. It means that the disparate backgrounds of Training and Development practitioners do not necessarily lead to differences in philosophy for the field and corresponding differences in practice. The finding may also demonstrate the significant role of the organization in influencing Training and Development purposes, goals, and objectives—a role apparently significant enough to mitigate the diverse backgrounds of the field's practitioners and their expected diversity in philosophy.

It should be noted that additional analysis indicated there was no significant difference between these two sub-groups for four of the philosophies. However, when Leaders and Professors with education degrees were added to Practitioners with education degrees, a significant difference in regard to the Progressive philosophy was found. Professionals with education degrees scored the Progressive philosophy significantly higher than did the professionals without education degrees.

The most likely explanation for this finding is the nature of the Progressive philosophy. Among that philosophy's basic principles, Elias and Merriam (1980) list "a broadened view of education" (p. 55), which could be expected to have special appeal to educators. Progressivism, according to Elias and Merriam, expanded the concept of education beyond that of the Liberal philosophy to include (a) learning experiences outside of the traditional school setting, such as those in the workplace; (b) learning experiences after traditional schooling ends—that is, lifelong learning; (c) the addition of vocational and other practical content into the curriculum; and (d) an emphasis on first-hand experiences rather than on vicarious experiences gained from books or discussions.

It should be pointed out that, in this study, the respondents with education majors were likely to have higher degrees, and thus, have received more education. They were also more likely to be professors who would be expected to support an expanded view of education. In addition, one of the study's assumptions was that professors and students in education programs have engaged in formal studies of educational philosophy and are aware of its value in educational practice. This finding of a significant difference in regard to the most prominent philosophical preference—Progressivism—according to the professionals' educational degree is important. It means that a systematic study of philosophy in a past education program could be a factor that influences one's current philosophy.

There were also significant findings relative to Radicalism for the variables of professional group, gender, highest degree, and major. The Radical philosophy was preferred by respondents who tend to be professors, and female, and who hold higher degrees and had education majors. Professors are probably more likely than the other two groups to feel intellectually comfortable with the Radical philosophy. It should be noted that Professors showed the strongest preference of all the groups toward both the Radical and the Liberal philosophies, thus indicating their willingness to acknowledge the peripheral philosophies as well as the mainstream philosophies.

Of all the findings for the philosophical preferences, those for Radicalism are the most challenging to interpret because the respondents could have considered the survey instrument's references to "social", "political", and "cultural" issues in two contexts: (a) society in general and (b) American business and industry. The Philosophy of Adult Education Inventory includes many references to "social and political issues," "social change," "social and cultural situations" and "society" in the responses corresponding to Radicalism, and they refer to the context of society in general. However, the instructions for the survey used in this study included an additional instruction to "interpret the questions from the perspective of Training and Development," and it is possible that respondents may have made the mental leap from the concept of "social issues" to the concept of "organizational issues" and from "cultural" and "political" notions in society to "company cultural" issues and "corporate political" concerns. It is also possible that they did not make that mental leap and only considered the survey responses in the context of society in general. Thus, instead of trying to explain the significant values for Radicalism, it seems preferable to recommend further investigation with more controlled parameters for considering that philosophy.

RECOMMENDATIONS FOR THE FIELD

The findings of this study can and should be used as a springboard to a formal dialogue among Training and Development professionals regarding philosophical foundations for the field. As part of the dialogue, they should discuss issues such as those raised by the following questions:

(a) Do the philosophies for Adult Education adequately reflect the philosophies of Training and Development? Are there issues that must be addressed by Training and Development that are not generally addressed by Adult Education, such as (1) management relations, (2) the role of marketing, (3) the administration of corporate training and educational programs?

(b) Do the philosophies discussed by Elias and Merriam reflect the range of philosophies that should be considered by Training and Development? For example, although Elias and Merriam refer to Realism as an antecedent of Behaviorism, should Realism, which emphasizes the study of factual information and classification of knowledge, also be considered for the field?

(c) Should Radicalism be given more prominence? Is it legitimate to redefine its original context of society in general to the context of American business and industry?

The relatively high response rates for the study and the numerous requests for results indicate that there is some interest in philosophical issues among professionals in the field. This interest should be interpreted as a signal that more writing on philosophy in the literature could be beneficial for the field. It would also be helpful for professional organizations—such as the American Society for Training and Development and the National Society for Performance and Instruction—to develop programs on philosophy and philosophical issues related to the field.

Training and Development professionals should learn more about the philosophies that were the focus of this study—especially the Progressive and Behaviorist philosophies. Knowledge of the philosophies would place them in a better position to evaluate how well their current practice and beliefs compare with the various philosophical orientations. They would also be better able to use their understanding of the prominent philosophies in making decisions regarding their practice.

Training and Development programs in universities should require, if they do not already, a course in educational philosophy. A systematic study of philosophy would help students link philosophy to practice. It would also expose them to a range of philosophical thought from which they could determine their own positions.

As part of their staff development programs, Training and Development leaders should include discussions of philosophy, perhaps using the Philosophy of Adult Education Inventory as a starting point. Leaders should also encourage their staff members to learn more about the established philosophies and to develop their own personal philosophies.

Finally, Training and Development professionals should acknowledge eclectic philosophical preferences just as they acknowledge their own diversity. Although this research has identified various demographic variables that impact philosophical preferences, there is no "right" or "wrong" professional group, age, gender, highest degree, or type of educational background for Training and Development professionals. Nor is there any "right" or "wrong" philosophy for the field. Professionals in Training and Development should appreciate the diversity of individuals and philosophies that exists in their field and be stimulated by the challenge of working toward common goals.

CONCLUSION

Currently, the literature of the field of Training and Development lacks substantive documentation of educational philosophies that could guide practice. This study's national survey of professionals in the field regarding their educational philosophies was considered to be a means of raising the awareness of the field's need in this area.

Like other fields of education, Training and Development must mature according to relevant theoretical and philosophical rationales as well as research findings, and its literature should reflect the foundational issues as well as the practical. The presence of philosophical writing in the literature, therefore, would serve as an indicator of the growing maturity of the field and provide the field's practitioners with a resource in addition to their experience for making sound decisions about training in the workplace.

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Teacher Characteristics Related to the Adoption
fo Agrisciecne Curriculum in Virginia
Agricultural Education Programs

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The number of middle school programs in agricultural education has grown steadily over the last decade with 31 states currently offering agricultural education in the middle grades (Barrick & Hughes, 1992). Unfortunately, this boom in growth has not been followed by an increase in appropriate middle school curriculum (Hansen & Miller, 1988).

Understanding Agriculture: New Directions for Education (1988) recommended additional science-based curricula be used in agricultural education programs to teach the biological, physical, and chemical sciences through agriculture. The Carl D. Perkins Vocational Education Act of 1990 further emphasized the importance of teaching the science of agriculture through integration of academic and vocational education.

In 1990, the Virginia Department of Education designed an agriscience curriculum entitled, Agriscience Education for the Middle School that was reflective of recommendations from the National Research Council and the Perkins Vocational Education Act of 1990. This agriscience curriculum is currently available for middle school agricultural education programs in Virginia.

This new curriculum for middle school agricultural education was developed by educators throughout the commonwealth and provided teachers with a comprehensive agriscience program. However, the question to be answered was; will the teachers adopt and use the new curriculum?

Triandis (1971) identified four indicators for predicting human behavior. They included attitude, social norms, habits, and perceived benefits of the behavior. For the purpose of this study, attitude represents "a state of mind or feeling" (Webster's, 1988, p. 136) toward agriscience. Social norms are reflected in the current condition of agricultural education. The teachers' habits will be assessed through their knowledge and application of agriscience competencies as well as teacher demographics. Expected benefits of agriscience education can be assessed through identifying the teachers' anticipated outcomes of agriscience curriculum (Mischel & Mischel, 1977).

If "educational change depends on what teachers do and think" (Fullam, 1982, p. 107), then predicting behavior should be closely tied to teacher knowledge. Curriculum taught in the classroom depends on the teacher's personal theories and beliefs (Ross, Cornett, & McCutcheon, 1992).

Teachers tend to teach what they know best (House, 1981). If teachers have a low degree of agriscience knowledge, they will be less likely to include agriscience topics in the curriculum. Hashew (1986) stated that prior teacher knowledge of subject matter contributed greatly to the transformation of the written curriculum into an active curriculum component in the classroom. Kirby (1990) reported teachers in North Carolina believed that a lack of knowledge was a major barrier in teaching agriscience.

Expectations that the teachers hold toward an innovation will affect their adoption of the innovation. Teachers tend to be concerned about the affects of educational innovations on the student (Darr, 1985). Darr also noted that when teachers perceive changes in the curriculum to benefit the students, they are more likely to adopt those changes.

Placing subjects into categories that assist in the description of the population is a basic psychological process (Guilford, 1965). Guilford also noted the occurrence of classification variables in both scientific and social research to place individuals into categories for analysis.

Cheek and Beeman (1978) found that the age of the teacher effected the teacher's perception of the importance of professional affiliations and professional development.

Blezek (1982) and Cheek and Beeman (1978) found a positive relationship between the years of teaching experience and the perceived importance of the role of the teacher. Borko and Niles (1982) reported that older teachers could define their roles and philosophies better than younger teachers. Additional education was identified by Rush (1984) as a strong predictor of teacher effectiveness.

Given the growth of middle school programs in agricultural education in the United States and the unique needs of middle school youth, it is important for the agricultural education profession to analyze middle school curricular efforts, such as the one in Virginia. Measuring the influence of the teacher on curriculum adoption can offer insight in future curriculum development efforts as well as in-service and pre-service education.

Purpose and Objectives

The Commonwealth of Virginia has presented a new curriculum for middle school agricultural education programs. The extent to which the state approved curriculum competencies have been adopted by middle school teachers needs to be determined. Furthermore, characteristics of the teachers within the middle school agricultural education programs that influence the adoption process also needs to be determined. Therefore, the purpose of this study was to determine the relationship between teacher characteristics and the adoption of the middle school agriscience curriculum in Virginia middle school agricultural education programs.

The specific objectives were to determine:

1. the amount of agriscience being taught in Virginia middle school agricultural education programs,

2. the extent to which teachers' attitude toward agriscience, teachers' knowledge toward agriscience, teachers' expectations of agriscience, and selected demographic traits of teachers were related to the adoption of agriscience curriculum in Virginia middle school agricultural education programs.

3. a predictive model for the adoption of agriscience curriculum in Virginia middle school agricultural education programs.

Methods and Procedures

The frame of this census study consisted of 57 teachers of middle school agricultural education (Virginia agricultural education teachers directory, 1993). Following the procedure outlined by Dillman (1978) for collecting survey data, an 81% response rate (46 teachers) was obtained from a series of mailings in the fall of 1993. The mean responses for early respondents (responding to the first mailing) and late respondents (responding to the last two mailings) were compared to determine if there were significant differences between the groups. This technique described by Miller and Smith (1983) is used to control for non-response error. No significant differences were found so the results can be generalized to the target population of middle school agricultural education teachers in Virginia.

Of the 46 responses received, 45 were deemed useable and were analyzed with the NCSS statistical package for personal computers. Descriptive statistics as well as correlation and multiple regression analysis were used to address the objectives.

Instrumentation

A review of literature revealed no satisfactory instrument had been previously developed to examine the objectives of this study. Therefore, the instrument was developed by the researchers to obtain the data needed to respond to the research objectives.

A panel of experts consisting of teacher educators and administrators at Virginia Polytechnic Institute and State University to establish content validity. The instrument was pilot tested with Virginia junior high school agricultural education teachers who were not included in the population of middle school teachers. To establish reliability, alpha coefficients of internal consistency (Cronbach's Alpha) were calculated for the knowledge instrument (.91), the attitude instrument (.94), and the expectations instrument (.88).

The instrument to measure the amount of agriscience taught in Virginia middle school agricultural education programs was developed from the Virginia Department of Education's existing recommended curriculum for agricultural education in the middle grades entitled, Agriscience Education for the Middle School (1990). Teachers were asked to identify competencies taught in their programs by answering "yes", if they included the topic in their instruction, and "no" if they did not include the topic. The recommended curriculum for grades six, seven, and eight included 136 competencies. On the recommendation of the panel of experts, the competencies were divided into two equal parts (68 competencies each) taking every other competency starting with the first to make list A, and using the opposite competencies to compile list B. The competencies were divided to decrease the size of the survey instrument and increase the response rate. The lists were randomly distributed to the teachers. One set of competencies was included in form A the other set was included in form B. The mean responses from list A and B were compared and showed no statistical difference.

The attitude instrument was a semantic differential designed to measure the evaluation, potency and action domains of attitude. The instrument developed to measure teachers' knowledge of agriscience was a four point Likert-type scale. The scale was labeled Strongly Agree, Agree, Disagree, and Strongly Disagree. The subjects were asked to respond to the question: "I know enough about this competency to teach it to my students," for each of the 68 competencies. The competencies identified to measure the amount of agriscience taught were also used for this instrument.

The expectations instrument consisted of 10 statements that reflected benefits and expectations of agriscience programs. The statements were developed from Agriscience Education for the Middle School (1990). The teachers were asked to rate the statements on a four point Likert scale (Strongly Agree, Agree, Disagree, Strongly Disagree).

Demographic information was collected to amass the following information: teachers' age, teachers' gender, teachers' education level, teachers' experience, and teachers' professional affiliation.

Findings

Objective 1

Virginia middle school teachers of agricultural education taught an average of 67.39% (46 of the 68 competencies) of the approved agriscience curriculum with a standard deviation of 15.98. The range of competencies taught spanned from 31% to 99% (21 to 67 of the 68 competencies). The data had a bi-modal distribution with 22.2% of the respondents teaching between 51% and 60% of the agriscience curriculum, and 28.9% of the respondents teaching between 71% and 80% of the agriscience curriculum.

Table 1
Amount of Agriscience Curriculum Taught (n=45)

% of Competencies	n of Competencies	# of Respondents	% of Respondents
30 - 40	20 - 27	1	2.2
41 - 50	28 - 34	5	11.1
51 - 60	35 - 40	10	22.2
61 - 70	41 - 47	7	15.6
71 - 80	48 - 54	13	28.9
81 - 90	55 - 61	5	11.1
91 - 100	62 - 68	4	8.9
Total		45	100.0

Objective 2

Scores on the attitude, knowledge, and expectations instrument were normalized to facilitate analysis. A low score of zero and a high score of 100 is possible for each of the three components.

The correlation coefficient between teachers' knowledge and the amount of agriscience curriculum taught was .61. The knowledge score distribution was positively skewed. The mean knowledge score for middle school agricultural education teachers was 82.23 with a standard deviation of 11.11. The range of knowledge scores spanned from a low score of 53.3 to a high score of 95.33. Over 61% of the teachers surveyed had a self reported knowledge of 81 or above. Only 8.3% of the teachers evaluated their knowledge of agriscience below a score of 70.

The correlation coefficient between teachers' attitude and the amount of agriscience curriculum taught was .45. The mean attitude score of middle school agricultural education teachers in Virginia was 87.78 with a standard deviation of 13.61. The range of scores spanned from a low score of 50 to a high score of 100. The distribution of attitude scores were positively skewed.

The correlation coefficient between teachers' expectations and the amount of agriscience curriculum taught was .34. The mean expectation score for middle school teachers of agricultural education in Virginia was 80.98 with a standard deviation of 10.38. The scores ranged from a low of 55 to a high score of 100. Over 88% of the teachers had an expectation score of 71 or higher.

Nine demographic variables were selected to differentiate among the teachers involved in the study. They included years of teaching experience, years of middle school teaching experience, years in the present teaching position, years of high school agricultural education teaching experience, membership in the Virginia Vocational Agriculture Teachers Association (VVATA), membership in the American Vocational Association (AVA), gender, age, and education level. See table two for inter-correlations.

Objective 3

Multiple regression analysis was used to determine the best model for explaining the variance associated with the dependent variable, amount of agriscience curriculum being taught by a linear combination of the independent variables. Backward elimination was used to determine the multiple regression model that best explained the dependant variable, amount of agriscience taught. When all 13 variables were included in the regression equation, the sequential R^2 was .70. The best fitting model consisted of the four independent variables: knowledge of agriscience curriculum, attitude toward agriscience curriculum, years in the present teaching position, and expectations of agriscience curriculum.

The model had a total R^2 value of .64 accounting for 64% of the variance in the amount of agriscience curriculum taught. Although the addition of the variable, expectations of agriscience curriculum appears not to add a significant amount of unique variance in the model and did not have a significant t value (Table 3), it increased the model R^2 from .51 to .64. Inclusion of this independent suppressor variable adds an additional .13 to the model R^2 and carried an F value for change in R^2 of 12.67 that tested significant at the .05 alpha level. Suppressor variables purify equations by filtering error variance associated with independent variables that are highly correlated with the suppressor variable (Pedhauser, 1982).

Table 3 (n=45)

Step-Wise Multiple Regression Analysis Model with the Dependent Variable Amount of Agriscience Taught

Variable	Standard Estimate	t-val	t-prob	Seq. R^2	R^2 Change
Knowledge of agriscience curriculum	.67	4.83	<.01	.39	.00
Attitude toward agriscience curriculum	.39	2.34	.03	.49	.10
Years in present teaching position	-.39	-3.33	<.01	.51	.02
Expectations of agriscience curriculum	-.25	-1.37	.18	.64	.13

Conclusions

1. There were two distinct groups of teachers in middle school agricultural education programs in Virginia, those who were teaching a large part of the curriculum and those who were teaching only a small portion of the curriculum.

2. Middle school teachers of agricultural education in Virginia had a high positive attitude toward agriscience. Attitude toward agriscience curriculum was a meaningful predictor of the amount of agriscience curriculum taught by middle school teachers of agricultural education in Virginia.

3. Middle school teachers of agricultural education in Virginia were knowledgeable of agriscience curriculum. Knowledge of agriscience curriculum was a meaningful predictor of the amount of agriscience curriculum taught by middle school teachers of agricultural education in Virginia.

4. Middle school teachers of agricultural education in Virginia held high expectations of agriscience curriculum. Expectations of agriscience curriculum was a meaningful predictor of the amount of agriscience taught by middle school teachers of agricultural education in Virginia.

5. As the teachers tenure at a school increased, the likelihood of adopting the agriscience curriculum decreased. Years in the current teaching position was a meaningful predictor of the amount of agriscience curriculum taught by middle school teachers of agricultural education in Virginia.

Recommendations

1. Given the existence of two distinct groups of agricultural education teachers in Virginia middle schools, more attention needs to be given to the characteristics of knowledge, attitude, expectations, and time spent in the current position to understand differences in these groups.

2. Given the existence of the contribution of the teachers' positive attitude toward the amount of agriscience curriculum taught by middle school teachers of agricultural education in Virginia, greater efforts by teacher educators, the Virginia Department of Education, and agricultural interests in Virginia should be devoted to building on positive attitudes toward agriscience.

3. Given the existence of the significant contribution of the teachers' knowledge toward the amount of agriscience curriculum taught by middle school teachers of agricultural education in Virginia, more effort is needed by teacher education to prepare prospective teachers in agriscience content and methods as part of their teacher preparation. The Virginia Department of Education and agricultural interests in Virginia should also commit to teacher education through pre-service and professional development activities involving agriscience education.

4. Additional study is warranted in the area of teacher experience and curriculum adoption.

5. Although this study provides baseline data as to the amount of the agriscience curriculum being taught, the depth of instruction is not addressed. The researchers would suggest replication of this study using qualitative measures such as classroom observation to determine the accuracy of these findings.

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Speaking About School Climate in Emerging Vocationalism: Voices of Diversity Within the School

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Speaking About School Climate in Emerging Vocationalism: Voices of Diversity Within the School

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As America's students and future work force become increasingly diverse in ethnicity, family, culture, and economic background, the challenges they present to employers, educators, and vocational educators, in particular, are not well understood. The rapid increases in both the scope and magnitude of diversity present enormous implications for preparing these individuals for productive employment in today's learning-intensive and technology-intensive work place. This paper presents preliminary findings of a national longitudinal study of students enrolled in both secondary and postsecondary programs featuring emerging vocationalism (e.g., programs featuring Tech Prep, integrated academic-vocational learning, career academies). The purpose of the study is to describe the students' perspectives and experiences as they enter, participate, and graduate from these programs. Based on a modified grounded theory approach to research, school climate emerged as an important aspect of these emerging vocational programs. The findings presented on this document focus exclusively on the experiences and perspectives of students enrolled in five secondary programs representing different curriculum orientation (e.g., business, manufacturing, science and technology), location, size, and students with different backgrounds.

Numerous policy analyses have noted that one of the most significant challenges confronting U.S. public policy is the rapidly growing diversity of our nation's population (Pallas, Natriello, & McDill, 1989; Ward & Anthony, 1992). During the 80's, a number of educational reform initiatives were advocated to provide a more effective education for the "lowest third" of our students who are at-risk, but failed to produce academic gains for this segment of the student population, reduce youth poverty or increase high school graduation rates (Hodgkinson, 1989). In response to these challenges, over the last few years, educational reform has included comprehensive efforts to expand and improve curriculum opportunities for all students as opposed to just some particular groups. Presently, educators, administrators, researchers, and policy makers are engaged in developing state plans and implementing calls for reforms derived from the Perkins Act Amendments of 1990 and the School-to-Work Opportunities Act of 1994. As this push for educational reform continues, there is an ongoing debate about the value and lasting impact of these reforms. Missing from both sides of the debate, however, is student-level information describing the impact of these reforms on learning experiences and transitional experiences upon graduation from high school.

While youth and adults are the central focus of vocational-technical education programs, we have relatively little information from students describing and evaluating how they came to enter programs or their perspectives on what is occurring in schools and post-secondary institutions. As the field enters a new era of education and workplace reform, it is essential that the influence of these initiatives be viewed and examined from the students' perspective (e.g., motivation, intent, parental influences, expectations; the diffusion or persistence of social stigmas; and the efficacy of specific curricula, alternative teaching approaches, and education and work linkages in programs). Development of more complete understandings of the personal experiences encountered in education and work (separately and interactively) is crucial to an understanding of how students make decisions to enter education for work programs. Further, how students from different genders and ethnic backgrounds differentially experience vocational education is also central to understanding the impact of policies and practices on overcoming barriers to full participation in the economy.

Longitudinal studies such as the National Education Longitudinal Study of 1988 and High School and Beyond (1980) are generally useful for addressing policy issues and raising significant questions regarding at-risk and other students, but they do not offer specific, student-level insights. To bring full meaning and understanding to educational reform and improvement initiatives such as Tech Prep and Integration, students' writings and assessments are an invaluable source of information. Further, most longitudinal studies do not provide opportunities to examine older adult populations and their decisions relative to education during or following extended participation in the work force.

The purpose of this study is to build an understanding of the character of experiences acquired by students through programs which represent "emerging vocationalism," with particular emphasis on the experiences of students who are traditionally under-represented in such programs. This is an ongoing longitudinal project that is examining the experiences of 133 vocational-technical students over a 3 1/2 year period. This research is providing rich information to better understand the actual impact of emerging vocational programs on participants, how they came to enter programs, and their perspectives on learning experiences occurring in schools and post-secondary institutions. The preliminary findings discussed in this document focus on secondary students enrolled in five programs located in major regions of the nation: northeast, Midwest, south, and west (see Appendix A).

Research Approach

The study is based on a modified grounded theory approach to research. The research is grounded in: (1) programs featuring key aspects of "emerging vocationalism," and (2) the experiences and perspectives of students with different backgrounds enrolled in these emerging vocational programs across the country. We use this theoretical framework to position ourselves, the research participants, and the readers when discussing the study design, data collection and analysis procedures.

The concept of "emerging vocationalism" has evolved within the context of an educational movement promoted by the passing of the Perkins Act Amendments of 1990. This movement places an emphasis on academic as well as occupational skills and calls for the involvement of "all segments of the population." In short, emerging vocationalism could be described by three core components: (1) integration of academic and vocational education; (2) integration of secondary and postsecondary education; and (3) developing closer linkages between school and work (Hayward & Benson, 1993; Phelps, 1992; Rosenstock, 1991). A number of key elements have been further identified by the National Center for Research in Vocational Education for each of these three core components (NCRVE Agenda, 1993, 2-3). This framework for emerging vocationalism is used in this project to focus the students' experiences and to make sense of their perspectives using the program context as a point of reference.

Further, to capture the students' perspectives the design of the project is predicated on "grounded theory". Generally, grounded theory is discovered or generated inductively from the intense study of empirical data and information. For example, theories regarding school climate were derived from the information collected on how these representative students experience schooling in certain vocational-technical programs. As Strauss and Corbin (1990) suggested: "A grounded theory is one inductively derived from the phenomenon it represents. That is, it is discovered, developed, and provisionally verified through systematic data collection and analysis..." (p. 23). In this paradigm, one does not begin with theory and seek to verify or improve it. Rather, a topic of interest is selected for study and what is relevant to the topic is allowed to emerge without preconceived notions about the nature or structure of the theoretical knowledge. This approach provides an appropriate framework for understanding student voices and experiences. Further, grounded theory allows for the generation of an integrated theory which evolves from the data in meaningful patterns which can be subject of further testing (Glaser & Strauss, 1967; Strauss & Corbin, 1990).

Derived from this research approach, a preliminary analysis of the data has clearly indicated school climate, student aspirations, and knowledge production are important indicators of the students' experiences in emerging vocationalism. For the purpose of this paper, only school climate will be discussed.

School Climate

Over the last two decades, much attention has been given to the effects of school characteristics on student achievement. School climate, in particular, defined as the environmental characteristics affecting teaching and learning has become a key theoretical construct. School climate has also been defined as a combination of subjective and objective indicators which represent the overall impression one gets about a school (Ellis, 1988). For instance, Roueche and Baker (1986), defined school climate as the overall environment, values, shared beliefs, and personality of the school. Literature on effective schools indicates that various factors of school climate (e.g. the presence of school spirit, discipline and order in the school, supportive environment, safety concerns) play a role in increasing the effectiveness of the school in providing a positive place where learning can take place (NCES, 1990; Paredes, 1991; Wardlow, Swanson, & Migler, 1992). Further, in a recent study, school climate was one of six theoretical constructs considered to be critical influences on student learning (Wang, Haertel, & Walberg, 1993). Other definitions have included student characteristics, classroom practices, home and community educational contexts, design and delivery of curriculum and instruction, school governance and organization, and high expectations and high instructional goals of teachers (Druian & Butler, 1987). The critical role of school climate appears to be as an indirect determinant of student learning through positive interactions between teachers and students, safe school environment, encouragement of critical thinking and creativity, acceptance of diversity and pluralism, and appreciation of learning opportunities (Wang, Haertel, & Walberg, 1993; Wardlow, et al., 1992).

What does this all mean for students in emerging vocational programs though? Summarizing the literature, it has been argued elsewhere that school climate consists of four dimensions (Smey-Richman, 1991; Wardlow, et al., 1992). These include ecology (e.g., building characteristics, size), milieu (teacher and student characteristics), culture (school values and perceptions), and social system (interaction between teachers and students, school support). It has been also suggested that of these, variables of school culture and social systems are more influential on students' learning (Smey-Richman, 1991). In our study, the importance of school climate clearly emerged within and across programs following a grounded theory approach to research.

Method

Study Design

The project design was revised considering the input from a research advisory group, review of relevant literature, feedback from personal consultations with NCRVE staff, and focus groups completed with students and staff involved in programs with potential for participation in the study. Based on this input, the concept of "emerging vocationalism" was further characterized with a set of indicators to provide specific examples for each of the three core components mentioned above. Further, four major research questions were reviewed and refined: (1) What are the reasons students enroll in these programs?; (2) What kinds of learning experiences students are exposed to?; (3) What are the students' perspectives on these learning experiences?; and (4) What are the student's expectations and experiences upon graduation?

To frame the students' learning experiences within programs of emerging vocationalism, we used a multicase study approach and selected 5 secondary programs (cases) and a representative sample of 82 students. Fifty-four programs (33 secondary, 21 postsecondary) were screened based on descriptions found in recent national publications, program brochures, or provided via direct contact over the phone and/or nominations from persons knowledgeable of the program(s). We used a rating system to determine whether practices related to the indicators were present or not. Selected sites are located in major geographical areas of the country (south, northeast, Midwest, and west) and represent rural, urban, and suburban communities. Overviews of the programs are presented in Appendix A.

Student Selection

In 1993, participants were selected from two cohorts within each program, beginners (freshman and sophomore) and completers (juniors and seniors). Main criteria for student selection along with school status included gender, ethnicity, socioeconomic background, and disabilities. The sampling strategy was based on a demographic profile using data from the National Education Longitudinal Study of 1988, first follow-up study conducted in 1990; and data from the National Assessment of Educational Progress of 1990. These two national studies indicated a proportional participation by gender and low participation of certain ethnic groups. Thus, under-represented groups were over-sampled to include a more representative voice in this study. To date, overall student participation by gender in the secondary cohort is 61% male and 39% female students. Participation by ethnicity is as follows: 34% African-American, 7% Asian, 23% Hispanic, 3% Native American, and 38% White students.

To select students, project staff contacted a program liaison at each site and we provided them with a package describing our study. We asked these persons to facilitate the identification of a pool of 25-30 students with the characteristics described above. Once access was granted, we visited the programs and met with the pool of 25-30 students identified by contact persons. We explained our study to the group and did a quasi-random selection of 10-15 students from those who volunteered participation.

Data Collection

Instruments and procedures for data collection were pilot tested in two sites not included in the study. Prior to each interview, we have explained to the participants our research interest and assured the confidentiality of all information. With the permission of the interviewees, all interviews have been tape recorded and complementary notes have been taken. In addition, class observations have been also conducted in regular academic courses (e.g., English, math) and program-specific courses (e.g., computer aided drafting, agricultural leadership). Following each site visit we summarized the interviews and developed a brief description of the school and the program using personal notes and print materials collected at each institution. The first round of site visits began by mid-November, 1993, and continued through December, 1993. A second round of interviews is underway in 1994 and four more site visits are scheduled for the 1995-96 period. The preliminary findings presented here derived from the analysis of the first round of site visits.

Analysis

To guide our analysis, we followed an inductive grounded theory approach to guide our analysis. This is a systematic comparative method which integrates data collection, identification of themes, and analysis with grounded theory. Two major components characterize the systematic comparative method (see Glaser & Strauss, pp 105-111): the analytical steps and analytical guiding questions. Our analytical steps included the following: (1) Comparison of critical experiences or events within broad categories; (2) characterization of each category; (3) verification of theoretical properties; and (4) theory integration.

Further, one guiding question was central to our data analysis: What is the nature and character of the students' learning experiences in programs representing emerging vocationalism? To characterize our findings derived from this question we further addressed a sub-set of analytical guiding questions: (1) What are the learning experiences or events deemed important across interviews and programs?; (2) how do students describe these experiences or events?; and (3) what are the students' evaluation of such experiences or events?

During the first step of the comparative method project staff shared with each other our personal and academic background to "position" ourselves in our data analysis and integration of theory. The second step involved the review of interviews on an individual basis using interview transcripts and having at least two staff reviewing and coding each interview. Based on our guiding questions we identified experiences and incidents which integrated categories of emerging themes. We used this "open" technique of the comparative method, across interviews and across programs to find consistency in at least half of the participants within each site, and at least three of the five secondary programs. During the third step of the analysis, we further refined our indicators and continued testing the emerging theory. At this point, we first tried to test emerging indicators of categories across participants within each program against our rule of having evidence from at least half of the interviewees. Secondly, we tested our theory across programs against our rule of finding consistency in at least three of the five secondary programs. Through constant exchange during staff meetings we reached a point at which we all became satisfied with the consistency and validity of the indicators identified for each category.

Results and Discussion

Students' experiences and perspectives on school climate are presented on this document. Findings are presented first for each category of school climate and corresponding properties as they emerged from the analysis of research material. This section will be followed by a discussion which integrates students' perspectives into both the contextual dimension of emerging vocational programs and the extant body of knowledge.

School Climate

School climate in emerging vocational programs is defined for the purpose of this paper by supportive environment, access to a variety of curriculum opportunities, conducive environment, and a culture of high expectations. These characteristics of school climate emerged from the analysis as important features of the school which seem to have an impact on the students' learning experiences.

Supportive Environment. "Supportive environment" is a feature of the school climate that students described as being influenced by support from teachers, counselors, peers, mentors and established school services. Teachers and counselors in all the programs were perceived by students as helpful, understanding, supportive, compromising, nice, and friendly. Students consistently described the support received from teachers as essential in fulfilling the expectations of the rigorous curriculum that is present in these programs:

> "...when I've had problems they've [teachers] been really helpful especially in calculus this year. This year I've had to work hard and I'm doing a lot of calculus... but calculus has really been hard for me. And I was surprised by that because I've always been good at math. And I've been working a lot and having to go to my teacher for help frequently. She's [my teacher] been really helpful and when I had problems last year in precalculus I had great support for all my classes actually. I've always had good support here when I didn't understand something I needed. For example, with my writing class or last year's English classes. When I couldn't think of something to write I'd go to my teacher who's been the same for my sophomore year and this year."
>
> *White, male---Science and Technology Program.*

> "The classes are small and the teachers help and the students are pretty nice about helping you if you have trouble, that and the open environment. [These are] the things that I like about this school and the classes".
>
> *Asian, male---Business Program*

> [The project coordinator] "really tries to push [us] even more farther than we want. [The teachers] really push... us and... we're glad [they're] doing that. We can see what we can do ourselves [those things] we never though we could do.... They really support us.... They

> [teachers and the coordinator] come into class and say how are you doing? And what are you doing? And that's great and keep it up."
>
> *White, female---Manufacturing Program*

> "The good points, well I'd say the guidance counselors and the teachers. [At this school] you can talk to any teacher. You can tell them if you have a problem just go up to them and tell them-I just really need to talk to someone is it okay if I talk to you? They will be open minded about it, they won't tell anybody about it."
>
> *White, female---Technical Arts Program*

Beyond traditional academic support, teachers and counselors in these programs have developed specialized support for students through various intervention programs. Students described these services as peer counseling groups, tutorial programs, and support groups. Some of these services are provided jointly with local agencies and colleges. Students discussed how these services were developed to assist them with personal and academic concerns:

> "I've had some basic family problems. We have groups called impact groups. An impact group was started on drug abuse and then they added an alcoholic abuse and relatives of alcoholic abusers, and a family crisis one. That's the one I'm in. It's really helpful cause it's like a Socratic circle. There are eight or nine students in it and they basically talk and help each other out. A couple of teachers will sit there and just make sure everything runs smoothly. They also have gay and lesbians Project Ten, which is kind of a support group. I don't necessarily agree with it being a school run program but... it's there for them. There's definitely support here. You can always go and talk, most of the teachers here (I'd say seventy to eighty percent) are like close on a friend basis. Or you can sit down and say Ms. McGee can I talk to you about this? Can I talk to you about this problem? And she'll sit there and she'll listen to you, she'll help you out."
>
> *White, male---Business Program.*

> "We have tutors from different colleges who help us out. And then during the summer time what we do is we go to summer school three hours a day, live on campus at [the local] College."
>
> *Black, male---Technical Arts Program*

> "Oh yeah, you could get all kinds of help. ...any given day of the week during eighth period you could [attend] tutoring programs for any subject. ... you could get tutored by the teachers, or if they are busy you get seniors or juniors to tutor you."
>
> *White, male---Science and Technology Program*

Business and industry contributes to the supportive environment of these programs by participating in partnerships and providing internships, apprenticeships, and mentorship opportunities. Students perceive these relationships as supportive of the curricula in the programs and reinforcing their learning and providing for more individualized attention. For instance, students had this to say:

> "...my mentor... She basically tells me things we need to learn. And if I have difficulty I can go to her and ask her because she has been there. They've had this program for about five years so she gives me different tasks to do and then if I have any problems I can just go to her."
>
> *Asian, male---Business Program.*

> "...Mr. Jones [worksite instructor] he's always there [and] he kind of lets us go on our own but he's like a safety net, he's always there in case we're messing up."
>
> *White, male---Manufacturing Program*

> "I've found [work-site learning assignments] to be actually very beneficial ... I am working with a principal investigator ... doing all the tasks together and writing papers. I've learned a lot more than I would here [at the school]. I've actually got two people to work with, my mentor and his lab -tech."
>
> *White, male---Science and Technology Program*

The elements of supportive a environment described above represent the students view upon reflection on their learning experiences in the programs. Although described separately, these elements are generally spoken of by students as interacting in concert to create an overall sense of caring and support:

> "At this school there is a peer counseling group if I have personal problems or problems related to school I can go to them. There's a teen line I could call a 1-800 line. I could call them anytime.... and I could go to teachers anytime and my counselor downstairs Mr. Conrad."
>
> *Asian, male---Business Program.*

Exposure and Access to a Variety of Curriculum Opportunities. This feature of school climate emerged as another element climate that characterizes how students experience these programs. This is described as curriculum opportunities which may not be available at a different school such as career exploration, and variety of choice. Further, derived from these perspectives, students were able to identify connections of current learning experiences to future work and learning experiences. Thus, students throughout these programs consistently described how curriculum components created an environment that substantially influenced their learning experiences.

Career exploration through the integration of academic and vocational curriculums was discussed by students as influencing their experiences. Students are provided with opportunities to explore career clusters through a variety of occupational and academic offerings. For example, students observed that:

> "...in the business program it may start off a little slow but it's got good fields to teach you---accounting, business law, computers, how to type a resume. It's got programs where you can go to a bank and you can learn things about the bank. They have many clubs that even teach about banking ."
>
> *Hispanic, male---Business Program.*

> " ...some people might not have the right way of getting what they want in a career. They're saying I don't know what I want to do when I get out of school. ... this program shows [you]

> that [you] will be doing something [in the engineering field]."
>
> *White, female---Manufacturing Program*

> "I'm not a very science and tech person, I'll tell you that right now. I'm a liberal arts person but maybe this school is going to convince me that science and tech is good. I guess it'll be good because it'll show me [something] that I didn't have before."
>
> *White, male---Science and Technology Program*

Further, choice in the curriculum was described by the students as offering a variety of courses which they knew were not available at other high schools. Choice in the curriculum appears to foster in students a sense of control over their learning---as one student said it--- which may suggest they feel more connected to their learning:

> "It's excellent so far, it has a lot of variety of classes. If you don't like a certain business class you always have an option to go to another business class. The teachers have a business background, mostly every teacher at this school. And the classes---there's not only accounting there's four or five accounting classes!"
>
> *Asian, male---Business Program.*

> "The major strength [of the program] I would say [is] the many experiences in the classes .... You're not just cornered into one area of study, you can explore many different ones."
>
> *Black, male---Agricultural Sciences Program*

> "I do math team and computer team. I'm trying to take as many courses that I like as I can. I haven't really zoomed in on one major. That's one of the things I like about this school is they have a lot of the courses that you can't get anywhere else."
>
> *White, male---Science and Technology Program*

It appears career exploration and choice, as components of the curricula, provided students with opportunities to make connections between current learning and perspectives on future work and learning. This is reflected by a student in one of the magnet schools:

> "I just think that being in this kind of school I can better myself as an individual. You round yourself out more cause there's so many different little topics and stuff, especially electronics. Like some of the things that I've gotten here I never even heard about before. And this is our freshman year. Like bio-technology, and I've never done any kind of bio-technology class like that before. We're already involved in learning and applying advanced biotechnology in the laboratory---some people don't do this until their first year in college so that shows how accelerated this program is."
>
> *White, male---Science and Technology Program.*

> "[The program] gives me a background which helps me prepare for the future. So I won't be surprised when I find out what it really is. So this business program gives me general background information as to what to expect in real life."
>
> *Asian, male---Business Program*

> "The business program offers a lot of things [such as] interns [however], it doesn't necessarily mean you have to do this. You know they give you a wide view of what you want to do with your future. And they have the classes that can help you in the future."
> *Asian, female---Business Program*

Conducive Environment. A conducive environment for learning emerged as providing exposure to diversity, a non-threatening atmosphere (safety), and personalized attention. These three elements were described as defining characteristics of conducive environment when students reflected on their experiences. For instance, students enrolled in two programs where the student population is diverse discussed how this element of the environment contributes to their learning. The two programs have a broad occupational focus on technical arts and business. The students indicated that the exposure to different "cultures," and "backgrounds" would prepare them to function more productively in the real world by providing them with personal understandings of these differences. As one student put it:

> "But when I got here I saw all this mix of races and at first it seemed a little odd how they actually lived together. I'm a new student and I see that most people including those from last year got along fine. It attracted me to that sense of feeling here and so I sort of went with it. And it feels good you know trying to get along with other people even though there's so many problems around."
> *Hispanic, male--Business Program.*

> "I hope to gain a lot more experience in communication. This school is very involved in local business and also has different trips to different states. So I would be getting a mixture of different cultures or different types of habits people have and get more knowledge on the way to treat people, how to get along with different types."
> *Hispanic, male---Agricultural Sciences Program*

Another crucial element of the conducive environment was safety, described as a non-threatening atmosphere. Students described the environment as less aggressive than in other school that they had attended. Students expressed that the absence of violence in the school climate allowed them to enjoy their participation in the program:

> "And it's just a complete learning environment since I've been here I've never seen a fight. I came from a public school where we have them and [my previous school] wasn't exactly your best school. So we had fights and a lot of conflict. There's none of that, everyone is here for one thing. That's so hard to find in a high school I think cause other stuff gets involved and the learning aspect gets lost."
> *Black, female--Science Technology Program*

> "I mean you hear a lot about other schools with gangs and all that. From what I've seen there aren't really much, if any. So I really like going to [this school]."
> *White, male---Manufacturing Program*

> "[The school] seems small and it seems peaceful and it seems better than [previous school] which has had gang problems in the past."
> *Hispanic, female--Business Program*

> "Actually it's a lot easier coming here than it was going to intermediate school. The people here are not nearly as aggressive. In intermediate school we had fights everyday."
>
> *White, male---Science and Technology Program*

Further, the majority of the students in emerging vocational programs discussed personalized attention as making the school climate conducive to learning. Some students attributed the individual attention to the size of the school and classes as being small and organized. Others spoke of the willingness of teachers to spend extra time assisting students on personal and academic problems. The size and structure of the environment is characterized by students as allowing them to have individual time with teachers and to assume responsibility for the character of their learning experiences:

> "In my freshman year the student population was around seven hundred and the student-teacher ratio was really small. So that makes an individual learn more things and ask more questions when I don't understand a problem. And I said to myself, if I want to actually learn something at school you need personal attention..."
>
> *Hispanic, male---Business Program.*

> " ...since [the school] is so small you always get support from everybody and I think support in this school, is the main thing."
>
> *Hispanic, male---Agricultural Sciences Program*

> "And I learn more because of that [small classes]. Small classes help me, that doesn't have anything to do with the teacher."
>
> *White, male---Science and Technology Program*

High Expectations for Students and Teachers. Students characterized their learning experiences as having high academic standards, rigorous work loads, and in-depth instruction. Expectations for students in these programs were viewed as different from the expectations they had encountered in previous learning environments even by high achieving students. One student talked about how the climate of high expectations created competition and a desire to achieve at levels higher than before:

> "I figured to go here I would have to organize more, because basically I'm not a very organized person. You just have to learn how to sharpen up when you're here and stuff. It's not as easy. Everything back in middle school and through elementary school like being gifted everything comes so easy and when you get to [this program] it's a reality check. For the first time in your life you have to really study and you have to really work."
>
> *Black, female--Science Technology Program.*

Further, students appear to develop high expectations from teachers and coordinators in response to the academic rigor. In most programs, teachers push them to improve academically regardless of current academic level. Students feel that the standards in these programs are higher than in other schools and programs:

> "[This school] has more academic standards than any other school. I know for a fact, higher standards than at a couple of the other [area] schools. A lot of teachers will go ahead and get you out of there. Okay you can pass with a B. You're gone, bye. I don't have to see you anymore. They don't do that here. If you make it, you make it."
>
> *Hispanic, female--Manufacturing Program*

> "It's a real honor to be chosen to [attend] this school... there was almost two thousand teens that [applied] here. ... four hundred were able to get in. So that's like twenty-five percent out of two thousand.... And you have to be really good to get in here. ...You feel like it's a major accomplishment."
>
> *Black, female---Science and Technology Program*

> "Most teachers require you to type your homework so you have to use either a typewriter or a computer for homework. And the school has computers available to students so you can use them [during] lunch and between classes."
>
> *Hispanic, male---Business Program*

Students also feel that high expectations are reflected in the nature of the demanding workload of these programs. However, students are able to connect additional learning experiences to broad implications for future work and academic applications. As one student observed:

> "In your freshman year you end up [in a program like this which] is very demanding, you're going to have to learn how to budget your time. That's kind of something that we have to learn out on our own. There is so much to do and learn that sometimes you just get swamped with work and you have to know what you can do---and when--- and just to get by what to do the next day. Hopefully, those experiences will help you when you get into college and to decide what to specialize in."
>
> *Black, female--Science Technology Program*

> "The classes are challenging classes, you have to work extra hard."
>
> *Black, male---Agricultural Sciences Program*

> "We [students] all said wow we love this class, we love the teachers. And they [teachers] worked us so hard but we learned so much."
>
> *White, male---Sciences Technology Program*

Finally, students discussed experiencing high expectations in the school climate through in-depth instruction and learning. Students described this characteristic of school climate as providing them with a better understanding of content in the curriculum. This perspective can be best summarized by the following student account:

> "I learned a lot of things in this program because it just helps you to elevate your thinking to a high level, so that you can understand better. And hopefully, it'll get even higher as I go along."
>
> *Black, male--Business Program*

> "I find that the way they teach is a little different. It's more intuitive than it is at other high schools." One of the things I find wrong with the way teaching goes in general is they try to cram things into your head. And it makes the students think that that's the only way that they can learn, by memorizing things. You stop thinking about it and you just try to cram it into

> memory, and you're not learning that way. You're just memorizing things and if you do it that way then by the end of the year you'll have forgotten everything."
>
> *White, male---Science and Technology Program*

> "... it's not all cut and dry like it is in school. It's more you know you got to use your head a little more often, instead of looking in the book to find the answer. The class kind of prepares you to help find the answers but actually using it in the program helps [you understand]."
>
> *White, male---Manufacturing Program*

> "... in all my classes it's mostly like this-they [teachers] help you to understand what you're doing in the class and how to do it even better than you're doing right now."
>
> *Black, male---Science and Technology Program*

Conclusions and Implications

This initial analysis of interview material clearly indicated **school climate** is a critical indicator of the students' experience in emerging vocationalism. Programs which feature new connections to careers and the workplace along with integrated curriculums offer climates which today's high school students find to be attractive, safe, and challenging. Given the current focus on effective schools, a positive and challenging school climate is one feature emerging from these new education-for-work programs, which holds implications for serving all secondary school students more effectively.

The findings on school climate emerging from this analysis are consistent with extant theory on this construct (Smey-Richman, 1991; Wardlow, Swanson, & Migler, 1992). For instance, analyses of the NELS:88 data confirm the need to: offer a climate where learning is valued, where teachers know their students well and have high expectations for all students, a rigorous core academic program is in place and in alignment with flexible instructional strategies that can serve a diverse body of students (NCES, 1990).

In our study, both "supportive environment" and the "expanded educational and occupational opportunities" were embedded in the school climate and came up consistently within and across programs. This is an indication that students enrolled in emerging vocational programs find a supportive environment, which helps them adjust to a rigorous and new curriculum orientation. Some schools have some unique ways of providing support (e.g., "support groups", "buddy" program), but in most instances it is the positive attitude and availability of teachers, counselors, and administrators which makes a difference in the students' learning experiences both in and out of school. Further, the active role and positive attitude of teachers and counselors are key elements of the supportive learning environment. In addition, peers often provide personal and academic support, which helps to create a strong sense of ownership, belonging, and community among students in these programs and schools.

The career, professional, and workplace orientation of the school or program, on the other hand, appears to create an environment in which students see and value new educational and occupational opportunities. One school, for example, provides for a wide range of career opportunities in technology and business, stresses high academic standards, and points to college upon graduation. A program with a different orientation, on the other hand, focuses on work-based learning opportunities, emphasizes preparation in a broad occupational field and further education, and increases the chances for excellent paying employment opportunities upon high school graduation. In both instances, in spite of differences in school orientation, students share the view that a wide range of career and educational opportunities are available to them in the future. Students seem to understand the challenges presented by these opportunities, their potential impact in their lives, and the role of further education during and after the transition from high school to college or an occupation.

These programs and the students' experiences therein reveal environments which are very conducive for learning. Two of our programs are located the inner city of a major metropolitan area. Despite operating in neighborhoods and communities with some desperate economic and social conditions, the students find these programs to be considerably less violent than others nearby and places where students from different racial and economic backgrounds can learn together effectively. Additionally, these programs deal quite extensively with the issues of diversity and the acceptance of cultural and individual differences within their curriculums by; for example, having students work in teams, by examining the cross-cultural implications of marketing, and by using mentors for students from the private sector who have diverse backgrounds.

The climate of these programs also reveals the sense of new and high expectations for both students and teachers. The expectations for a rigorous academic foundation and broad workplace skills are clearly conveyed to students by the instructional staff and the workplace members and postsecondary faculty members with whom they interact. According to the students, the teachers and counselors emphasize homework, writing, and in-depth study, which, in turn, require more time and effort by instructors. Over time these schools and programs develop excellent reputations based on the high standards they set for students and learning. Often students described themselves as "lucky enough" to be selected, indicating a clear sense that these programs provide bright futures which include both further education and exciting career opportunities.

Emerging vocational programs appear to function in a school climate full of promises, expectations, and dilemmas. The promises are in the form of educational and occupational opportunities to be delivered in a nurturing and supportive environment. The expectations come in the form of rigorous curricula and high standards for both the teachers and students. The dilemmas lie in trying to keep a balance between a demanding and supportive environment, between a career and a college orientation, and between applied and traditional ways of learning, which in many ways are deeply embedded in the school culture.

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Appendix A: Secondary Sites

Site A

This is a comprehensive magnet high school serving 478 students in grades 9 through 12. Created in 1985, the school offers science, business, and technology in a variety of collegiate and career-bound formats. The school is located on a 72 acre plot in a large metropolitan area in the Midwest. On this site students simulate and actually realize the pursuits of agriculture. This objective is operationalized in arboretum management, pond management, test plots, nature trails, and crop breeding situations.

Student Enrollment
(Fall 1993)

Male	50%
Female	50%
Caucasian	15%
African-American	85%

Students indicated the curriculum of the school is demanding. The introductory courses are similar for all students and the junior and senior courses are based upon student preferences. Extensive curricular opportunities exist in horticultural sciences, food sciences, agricultural careers and leadership, and agribusiness.

Students attending the school are generally characterized as outgoing and ambitious. Due to it's elective nature, as a magnet school, academic rigor appears accelerated as compared to traditional high schools of similar size and demographics. As in many urban high schools, diversity is common in race and in socioeconomic status. Specific selection criteria, however, is used to maintain 50% enrollments by gender and a minimum of 15% Caucasian enrollment.

Knowledge is produced in many ways at this integrated vocational and academic campus. Students hypothesize outcomes, gather and analyze data, and report their findings. Some students have internship experiences at the city's board of trade and the state university.

The high school is a noteworthy magnet school. It's awards and accreditation are strewn throughout the overcrowded campus. The accomplishments of students encourage others to succeed. With a solid extracurricular participation rate of 100%, the students find school day and after school activities which make this school a community.

> "I think it's real learning when I'm conducting research. I love to complete the experiments, finding out new things. When I get the results it's always great to see that what I've done goes along with what the paper says or what the tests show!"
>
> *Senior student*

The school has a "new employability" competency focus. Students use SCANS competencies in their courses and are assembled into teams for competitions relative to the agriculture industry. Beyond this, the global marketplace focus allows students to compare the marketability of products in three different countries and economies.

Site B

This urban magnet high school began in late 1981 as a partnership effort between the school district, business community and government.

In 1991, the school added a fashion component to its curriculum with the support of fashion industries and local trade college programs. This high school is located downtown and affords students the opportunity to experience an open classroom and business-like environment.

> "I learn a lot of stuff out of this program because it just helps you to elevate your thinking to a higher level so that you can understand better...and hopefully I'll get even higher as I go along."
>
> *Asian female student.*

Admission to this school follows the general procedures for admission to all magnet schools in this district. Students apply and submit their applications to the district's headquarters where they are processed. Today, 865 students are enrolled . Eighty-six percent or 750 of the total student population participate in the business component. The remaining 115 students enrolled are in the fashion component. Over half of the students enrolled come from low, socioeconomic backgrounds.

Student Enrollment
(Spring 1994)

Total	865
Business component	750
Fashion component	115
Asian	9%
African-American	45%
Caucasian	9%
Filipino	2%
Hispanic	35%
Native American	3%

The school's business and fashion programs work in cooperation with the city area chamber of commerce and with the local business industry school and the fashion institute to provide the students with advanced, challenging study in their selected field. The business program of study offers students an advanced curriculum in business as well as including a general education component. A specialized program known as the Academy of Finance, is also an option to students who want advanced economic knowledge. Knowledge production is emphasized through class projects (e.g., economics, fashion design, accounting), which require the investigation of a topic, implementation of the project, and report writing/oral presentation of findings. Furthermore, applied academics is integrated in the business and fashion components using practical application related to the business world. Reading and writing skills are stressed across the basic academic coursework and business/fashion related courses. Additionally, all students take an introductory class in computers designed to furnish them with basic user skills in word processing, data base and spreadsheets. Also available to the students are beginning and advanced Pascal computer programming classes.

Internship programs are available to students. In the business program, the selection of students for the internships is based on academic achievement, faculty recommendations, and demonstrated performance and responsibility. Students studying fashion will be placed as interns in the fashion community after completion of basic coursework. The school also offers certificate programs in Clerical/Office, Sales/Merchandising and Accounting.

Site C

The objectives of the program are to integrate vocational and academic education, move from teaching narrow skills to a broad base instruction in all aspects of the industry, and integrate vocational education with the community.

Knowledge production is emphasized in all program components and technical programs offered by this program. In City Works for instance, students explore and research the city to build an understanding of how the city functions. Students must document their findings using portfolios, write papers and make oral presentations. In industries, students experiment with technologies, tools and materials to better understand production processes. In carpentry for example, students research, plan and experiment with various designs to produce educational wooden toys for children. The objective is to produce a piece that can be used to learn some physics principles while students work with their hands and enjoy learning at the same time.

Program Enrollment, Fall 1993

Total	225
Male	75.0%
Female	25.0%
Asian	1.5%
African American	32.0%
Hispanic	19.0%
Native American	.5%
White	47.0%

The Technical Arts program is one of seven at the host school, the only public school in this metropolitan area located in the Northeast. All programs operate independently but collaborate in various ways (e.g., sharing of library facilities, cafeteria, sports facilities, coursework). Restructured in 1991, the program is serving students in grades 9-12 and offering technical programs in the following areas: automotive, auto body, baking, carpentry, culinary arts, computer science, drafting and design, electrical, electronics, and graphic arts. The focus is on basic transferable skills leading to career and college opportunities. At the beginning of the program, students and staff renovated the assigned area in the school and built offices and shop cubicles for students to work on projects. Last year the school reported an overall student population of 2026 students representing 64 countries and 18 languages. When one walks around the school, can't help but notice the wide diversity of the student population.

During the 9th grade students go through various program components called City Life, City Systems, and City Works. During the 10th grade, students take two other basic components of the program. In Humanities, American Studies and Language Arts are combined. During the 11th and 12th grades, students choose a major and are able to take elective classes and enroll in internship programs to satisfy their own particular interests. Internships are available for juniors and seniors at a nearby technical institute (Tabletop Physics), a nearby university (Facilities Management), a local college (Careers in Education), a local corporation (Technical Careers), and local hospitals (Health Careers). New additions to the program include courses such as The Craft of Science in which students learn principles of physics, Starting a Real Business to develop entrepreneurial skills, and Science for Health Careers to prepare students interested in health professions.

Students in the program appear to be from low to middle socioeconomic backgrounds. They seem to be responding to the challenges put before them by the new program approach and are taking advantage of opportunities leading to career and college paths. There also seems to be student pride and ownership of the program since students and staff work together to build, remodel, and fix whatever is needed in the program. Safety doesn't appear to be a concern here. Further, applied academics is also emphasized across all program components. Courses integrate communication and problem-solving skills with a mix of hands-on activities and academic material. Students have to do extensive reading and writing in each of the program components. Students usually work on individual or team projects and they have to research, plan, and report about process and/or findings.

The teaching is framed within the context of how the city works during the 9th grade and humanities and industries in the 10th grade. During the 11th and 12th grade teaching occurs within the context of various workplace environments where students apply basic and advanced skills. Classes such as English and Social Studies, and American Studies and Language Arts, are integrated (team taught). Teamwork, problem-solving, communication skills, creative thinking, and the use of personal initiative are all emphasized across program components (e.g., City Works and Industries). Further, students have the opportunity to apply these new employability competencies when then participate in work-based experiences and interact with co-workers and supervisors. Multicultural awareness is developed through the daily interaction of students with different ethnic backgrounds and cultures. The program also provides academic and personal support services for all students such as counseling and tutorial services. It is apparent that teachers and counselors work very closely with students whenever they have a personal or academic problem.

There are various opportunities available for interested students to either take some classes during the summer or participate in internship programs at nearby colleges and universities. Students have the opportunity to strengthen or develop career and college plans through these learning experiences. Internships provide stipends and academic credit for participant students. The program works closely with local corporations, hospitals, and higher education institutions to provide for paid work-based experiences. The program also supports a cafeteria for teaching/learning purposes in the culinary arts. Further, a new course in the program provides students with opportunities to learn and develop entrepreneurial skills necessary to run a business. Integration of education and work is emphasized across all the technical components of the program and services and products are marketed in the community whenever possible (e.g.,, selling furniture to raise money for the carpentry shop, making and selling furniture on their own, repairing electronic equipment).

Site D

The manufacturing youth apprenticeship program began in September 1992 and is housed in a high school located in the a predominantly middle class suburban town. This is a two-county program supported by a consortium of 16 local manufacturing companies and seven high schools. There are currently 38 students enrolled in the program. Of these students, 30 are enrolled in the host high school while the rest come from other high schools. In terms of gender there are 31 males and 7 females. The majority of the students are Caucasian (36) and only two Hispanic students participate in the program. There are no identifiable students with disabilities, low socioeconomic background, or low English proficiency enrolled in the program. The host high school, however, supports an alternative program featuring inclusion practices, special education classes, and counseling and academic support services for students considered "at-risk" (about 20% of the student population).

The student enrollment of the host school is characterized as follows (Spring, 1993)

Caucasian	93%
African-American	2%
Hispanic	3.1%

The manufacturing academy is housed in a local company which agreed to provide the necessary space to hold instruction sessions and training equipment. Tools and machines were donated by six metal-working companies. Prospective students receive letters from program coordinator indicating their eligibility for the program. Participant companies are actively involved in the recruitment program and help orient students through the selection process by explaining incentives, work opportunities, and support for further education. Interested students are interviewed by personnel from participant companies who make the final selection of participant students. Selection for the program is based on academic performance, school attendance, and interest in manufacturing industries.

Students engage in project-oriented activities throughout their participation in the manufacturing academy. As students work on projects, they have to decide on the kinds of parts they would like to work on, find out what are the proper manufacturing procedures, write steps on a log book, make the parts, and make modifications as necessary. Through this process, students are able to identify ways to make parts faster while maintaining quality standards. Apprentices are encouraged to exercise their initiative to experiment with new procedures under the supervision of the instructor.

Students in the program spend two hours a day on hands-on instruction learning how to operate 30 basic tools in a factory-like environment. Apprentices receive $7,500 over a two-year period. These monetary incentives include scholarships awarded at the end of the first year. For instance, junior students who pass the course youth apprenticeship course of study satisfactorily, receive $1,000. Those students with "B" average receive $1,100 and those with "A" average get $1,300. During the second year, senior students are involved in a cooperative plan with pay for hours of work during each school day. Students completing the program receive a certificate worth about 1,700 hours of training in the metalworking industry.

The goal of the program is that graduates will continue their education through on-the-job training or in the classroom. Students may go on to a 4-year college or enroll in the local two-year technical college and earn an associate degree in applied science. Students who choose the latter career path may work full-time at one of the sponsor companies and attend school part-time with financial support from the company if pre-set grades are maintained.

The host high school promotes a program called PRIDE and is the school theme seen all around the school. This is a program designed to boost each student's performance, attendance, and contribution to the school and the community. School hallways are spacious, classrooms odd-shaped, and safety does not appear to be a concern to anybody. Students' artwork is displayed on hallways.

Curriculum materials were used in the program were developed by industry and host school personnel to stress practical applications in the manufacturing industry. Hands-on learning experiences is the focus of the program and students get preparation on how to use tools and equipment both at the manufacturing academy and at in the work place. At the academy, although the equipment used for instructional purposes is not up to date, students are exposed to a variety of machines and learn basic transferable skills in the manufacturing business. Participants can help each other and are closely supervised by the instructor who assist the students as necessary. Safety, problem-solving, and job-readiness are strongly emphasized. Further, apprentices complement their preparation during their participation in the cooperative program in the senior year. The cooperative program is designed to provide vocational guidance and training through a combination of school-based instruction and part-time employment in an approved job training position. In the cooperative program, students are exposed to the real work environment, updated equipment, daily operations and problems, and interactions with co-workers.

The focus of the program is reflected in the context of teaching. This is more obvious in math and computer coursework where practical applications to manufacturing processes are more easily related. Students in the program indicated they are more likely to understand course material whenever they have the opportunity to relate it to something of practical application. Further, students use math and geometry to solve problems and work with angles. Computer use is also emphasized to draw and design parts and work on blueprints. Since students have to document each project work, reading and writing skills are applied during the process. That is, students read safety procedures and manuals to make parts and write reports upon completion of each project.

The program is articulated with a local technical college and use of advanced or dual credits is possible. This way, training hours in the high school count toward the 8,000 hours needed to earn a Journey Person's Card and for two credits toward an associate degree. The program coordinator works for both the local technical college and the consortium of participant high schools. Overall, 16 local companies support both the manufacturing academy and cooperative program.

Site E

This suburban magnet high school focuses on science and technology offers a full-time program for students in grades 9-12. Its mission is to provide a rigorous college preparatory program to students with an aptitude and interest in the sciences and technology, and to stimulate cooperation among the surrounding academic, scientific, and business communities.

Approximately 1600 students are enrolled with 400 students admitted annually. Students apply for admission and are accepted based on a variety of criteria, including admission test scores. Entering Freshman must have completed Algebra I. Other factors considered for admission include: overall academic achievement, personal essays, teacher recommendations, and self-reported interests and activities. Applications are reviewed by an independent selection committee composed of counselors, teachers, administrators, and human relations specialists. Annually, the school receives 2,500 applications for admission. Students from six surrounding school districts are eligible to attend this public school.

Student enrollment, Fall 1994

Total	appx. 1600
Male	57-60%
Female	40-43%
Asian	20%
African-American	6%
Caucasian	68%
Hispanic	6%

The school promotes and maintains close linkages with business, industry, and governmental agencies. Some of the involved businesses include research and development firms; medical education, research, and health care facilities, agencies of the federal government, international corporations, and the state power company. Eleven specialized technology laboratories support the scientific research emphasis of the curriculum. The labs, which are sponsored by local business and research organizations, acquaint students with careers and research processes in such fields as biotechnology, aerospace, telecommunications, robotics and automation, and computer-aided design. During their senior year, students can elect to work with community-based mentors to complete their senior science research graduation requirement. Many of these companies and research firms provide summer and year-round employment for students, as well as financial assistance for tuition at post-secondary institutions.

The school is located in a suburban community populated with families of professionals in the upper-middle range of incomes. The racial composition of the school reflects that of the community: 68 percent White, 20 percent Asian, 6 percent African American, and 6 percent Hispanic. Males comprise 57-60 percent of the student population. The enrollment of limited English proficient and disabled students is limited.

The school provides more than acceleration and enrichment, which are available in all the county schools. What distinguishes this particular school is its emphasis on technology as a way of thinking about processes which extend human needs, as well as on the content and equipment relative to technology. For instance, the Freshman students complete a block-scheduled core course in Biology, English, and an introductory Technology course which includes working in teams to complete seven or eight projects. These projects/problems build on and link knowledge across several disciplines.

The capstone educational experience is the intensive senior research project conducted in one of the school's research laboratories and/or through a mentorship in a private or governmental sector and becoming apprentices or associates, thereby enabling them to assume responsibility for one aspect of a research investigation or project. Research projects undertaken by students include the application of knowledge to specific problems, original research, design, investigation and/or production.

All seniors keep a daily journal describing the progress, problems, and their insights gleaned from the project investigation. They are able to work in many labs in order to use all available technology for their project and often work in teams. Mentorship students also have an opportunity to explore first-hand several career options through interactions with different employees in the mentoring firms. Students in mentorships are completing projects such as the following:

- Preparing a digital terrain model (Computer-Aided Design)
- The expression of UV damaged-specific DNA binding protein in UV-irradiated human cells (Biotechnology)
- Generation of design parameters for advanced satellite designs (Microelectronics and Telecommunications)
- Numerical integration methods for bobsled trajectories (Energy and Power Systems)
- Patterning proteins using non-irradiated/irradiated salines on solid supports (Chemical Analysis)

This school, like all other high schools in the county, has a career center which contains extensive information on post-secondary educational opportunities, scholarships, and work opportunities. There are visitors and recruiters from college campuses on a daily basis in the Career Center.

The school is a rigorous and challenging environment for students. To attend, some students have bus rides of 1--1 1/2 hours, and no longer have their neighborhood friends. Thus, the 8th period Activity Session gives students an opportunity to choose between various extracurricular activities, including tutoring; peer counseling; academic, technical, scientific clubs; chess and computer clubs; and various personal support groups. Both instructors and counselors participate actively in the 8th period Activity Session, and assist students with their studies as well as their college and career plans. Data on graduates from a recent survey indicates that 75% of the graduates completed a college degree in science and technology, mathematics and computer science.

The learning environment at the school contains multiple representations of the culture and values which surround the school. Room arrangements often non-traditional and conducive to group work and brainstorming discussions. Art work and posters are everywhere. Students produce representations (e.g., technology project posters) of what they are learning, which fill the display cases in several wings of the school. Important social issues are given notice in the halls: "Join the Christian Athlete's Fellowship", "Help battered women", "combat sexism". One also sees motivational posters in the halls: "Curiosity takes you everywhere", and a board where anyone can commend someone for doing something well or going out of their way to help someone. Students also produce two journals annually which are a forum for presenting student inquiry and artistic expression. The journals are refereed by students and feature students' artwork, photography, science and technology investigations, and personal essays. To broaden access to science and technology education generally, the school hosts a number of professional development and inservice programs for math, science, and technology instructors from throughout the region, the state, and nation each year. During the summers enrichment-oriented Technology Institutes are available to 8th grade students who will not be attending the school .

AVERA Presentation
December 12, 1994

Families' Contributions to Adolescents' Preparation for Work: Findings and Methods of Research

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Background

A good deal of both scholarly and popular literature has long suggested that "families are the quintessential learning system in any society" (e.g., Leichter, 1974; Marshall & Tucker 1992). This conventional wisdom has not escaped contemporary policymakers. In a February 15, 1994 address at Georgetown University, for example, Secretary of Education, Richard Riley, suggested that families are life's first teachers; often of lessons that are never forgotten and that consequently have profound social and economic consequences for individuals and society as a whole. Not surprisingly, in their discussion of strategies needed for future high performance workplaces, Ray Marshall, former Secretary of Labor and Jim Guy Tucker, Governor of Arkansaw, (1992) point out that "it will do the country little good...to restructure schools unless we make families better learning systems and include families as integral components of restructured schools (p. 165).

Although there is evidence that families play educational as well as socialization roles, and that the family is a direct transmitter of occupational aspirations and status, little attention has been given to what people actually learn in families about work, how specific family structures and processes influence a person's ability to prepare for work, and whether these factors differ according to such factors as socioeconomic status, gender, or race.

This study was funded by the U.S. Office of Education through the National Center for Research in Vocational Education located at the University of California, Berkeley, and the Universities of Minnesota and Wisconsin. My colleague, Dr. Wendy Way from the University of Wisconsin was unable to be here today.

Purpose

The purpose of this study was to extend what is known about how families contribute to work-related learning. Year I (1993-94) focused on a paper and pencil survey of adolescents. Year II (1994-95 is focusing on interviewing the adolescents and conducting a paper and pencil survey of adults. I will be reporting the data from the survey of the seniors in high school. This portion of the study was completed in January, 1994.

A model incorporating Bronfenbrenner's (1977) concept of the ecology of human development was designed to examine associations between family system characteristics, adolescents' learning strategies, and indicators of readiness for work.

Family system variables included:

- intentional parental interactions with their children about work,
- characteristic patterns of family functioning such as relationships, system maintenance, and personal growth dimensions,
- family-based work experience,
- parent participation in school, and
- family work values such as intrinsic orientation, extrinsic orientation, work autonomy, and family traditions

Adolescent learning processes included:

motivated strategies for learning such as critical thinking, intrinsic goal
orientation, extrinsic goal orientation, self efficacy and effort regulation and
academic and social integration in school.

Work- readiness indicators included:

- two measures of career maturity - vocational identity and career indecision,

Work effectiveness skills incuded:

- the adolescents' perceptions of responsibilities of employers and employees, effective working relationships and managing work for personal satisfaction
- personal work values
- high school grades
- expected graduation, and
- post high school plans

Methods

Data were collected via written survey questionnaires comprised of existing instruments and items and scales developed specifically for the study. Respondents were high school seniors in four states representative of the four U.S. Census Bureau regions: Arizona, Georgia, Minnesota, and Pennsylvania. Usable responses were received from 1720 students in 24 high schools. Data were analyzed using descriptive statistics, one way analyses of variance, and linear and log linear regression routines. We are currently reanalyzing the data using LISRL

Findings

The sample for the study was fairly representative of the U.S. population in terms of geographic distribution, gender, race, and socioeconomic status. Students from rural areas and small towns were somewhat over-represented (44.5 % of the sample) and there were fewer respondents from the eastern portion of the country (Pennsylvania). Males were somewhat underrepresented (39.7%) but the sample mirrored the U.S. diversity in race, family form, and socioeconomic status. Close to two-thirds of the students were gainfully employed and 80% had some post-high school educational plans. Students' expectations of graduation from a four-year college (47.2%) appeared to be overly optimistic.

Patterns of Family Functioning

Students described the functioning of their families in ways similar to those of other same-aged students, for example, they reported more cohesion in their families than conflict or disengagement and characterized their family style as more democratic than authoritarian or laissez-faire.

Among the adolescent respondents, those who were employed large numbers of hours reported less positive types of family functioning than did those who were not employed or employed fewer than 20 hours per week. Students who worked more than 20 hours per week saw their families as more disengaged, conflictual, and laissez faire than others as well as less sociable, cohesive, and expressive. Students who reported being enrolled in college preparatory classes generally saw their families in more positive ways than those enrolled in vocational or general programs of study. General and vocational students reported more disengagement, conflict, and laissez-faire family functioning and greater external locus of control than students enrolled in college preparatory courses. Those in college prep courses saw their families as more cohesive and democratic than students in the general education track.

Students who reported receiving higher grades, expecting to graduate, and go on to school after graduation saw their families as characterized by dimensions generally associated with healthy families, for example, as more cohesive, democratic, and sociable and less enmeshed and laissez-faire.

Intentional Parental Interactions

Students reported a large amount of parental intentional interaction relative to work and careers. Not surprisingly, students who reported earning higher grades, planned to graduate from high school, and expected to graduate from a four-year college reported greater degrees of career-related interaction with their parents than did other students.

Family Work Values

Family work values (importance of prestige, income, liking the job and that the job is creative) were not perceived differently by students according to age or race, but they were according to gender. Females generally saw their families as characterized by stronger work values than males. Students in nuclear families reported stronger degrees of intrinsic and extrinsic work values and work autonomy than those in extended or other family types.

Students whose parents had lower educational levels, those enrolled in vocational programs, and those who reported receiving lower grades were more likely to report stronger work traditions values in their families (for example, attaching importance to choosing work similar to parents or choosing work suitable for one's gender).

Oher Family Characteristics

Students reported a moderate level of parent participation in school overall. This point is significant, since others (Davies) have found that parent's involvement in their son or daughters' education is a significant contributor to the child's school success.

Learning Strategies

Students motivations for learning (ie. took classes that were challenging, believed they'd get good grades, had conficence that they would understand the class content) appeared to mirror that of similar-age students in other studies. Students who were employed more than 20 hours per week reported more extrinsic motivations in learning and had lower self-efficacy about themselves as a learner than those who were not employed or employed less than 20 hours per week. This is a concern as the number of students who work 20 or more hours outside of class seems to be rising.

School Integration

Students reported being fairly well integrated into their school environment, both academically and socially. Interestingly, but perhaps not surprisingly, students who reported working more than 20 hours per week reported lower levels of social and academic integration in school than those who worked less than that or not at all.

Career Maturity

Students' responses suggested they possessed a modest level of vocational identity and career indecision (ie needing reassurance about their vocational choices, reporting difficulty in making up their mind about what they wanted to do, indicating that no careers appealed to them, feeling that they did not know what their abilities were and being in awe of people who really knew what they want to do). Female students reported greater degrees of vocational identity and lower levels of career indecision than males.

Work Effectiveness Skills

Work effectiveness skills in the areas of employer/employee responsibilities, developing effective working relationships, and managing work for personal satisfaction were modest according to student responses. For example, they were uncertain about correcting a fellow employee's mistake or communicating with their supervisor over missing work to attend a friend's wedding. Students whose mothers were gainfully employed during their school years had higher work effectiveness skill scores in all areas than others whose mothers had worked only at home.

Personal Work Values

Personal work values varied in relation to a number of personal and family factors. For example, the respondents were concerned about being able to make their own decisions about their future and indicated that they hoped that they would have work that would be challenging. Family structure and family intentional interaction had a significant influence on the students' responses in this area.

Family Contributions to Readiness for Work and Further Learning

An initial forced-entry linear regression indicated that each of the blocks of family characteristics (family functioning, intentional interactions, family work values, and other family characteristics) made significant contributions to the explained variation in students' approaches to learning and to indicators of readiness for work and further education. Learning strategies were also important contributors to explained variation in the work readiness measures. A number of the relationships exhibited a curvilinear structure.

Further stepwise regression analyses provided insights into the most important predictors of learning strategies and work-readiness indicators. The LISRL analysis, now underway, will show more of the systemmic interaction among the variables.

Learning Strategies

Elements of family functioning were important in explaining variance in students' motivated strategies for learning. For example, the personal growth dimension (intellectual/cultural orientation) was related to an intrinsic goal orientation, self-efficacy in learning, and critical thinking.

Parental intention interactions, an intrinsic family work orientation, and parent participation in school, were similarly important in explaining students' motivated strategies for learning.

School Integration

Aspects of the personal growth and system maintenance dimensions of family functioning (organization and religious orientation) were important in explaining students' academic and social integration in school. Also important explanatory variables were both intrinsic and extrinsic family work orientations and parent participation in school.

Career Maturity

The maintenance dimensions of family functioning such as, conflict and enmeshment were important in explaining students' career maturity. Intentional interactions were related to career maturity. Work autonomy as a family work value contributed to career maturity. Learning strategies were particularly important explanatory variables.

Personal Work Values

It appears the family value structure is particularly important in explaining the development of each category of personal work values.

Work Effectiveness Skills

Gender and race make important contributions to explained variance in all of the work effectiveness skills categories, with males African Americans and Hispanic Americans faring less well than others. The system maintenance and relationship dimensions of family functioning also seem to be importantly related to the development of work effectiveness skills, as do family work values. An intrinsic family work value system contributes positively, while conforming to work traditions seems to get in the way.

Conclusions

Although conventional wisdom, and other prior research has long suggested that the family makes important contributions to work-related learning, the present study, detailing specific family contributions, should erase any doubt that the family is a major player in the preparation of the nation's workforce. The ecological perspective on human development has provided a useful heuristic for examining family contributions to work-related learning and suggests that the family contributes to work readiness in several specific ways: first, through its characteristic patterns of functioning, second through the work-related value structure it creates for children, and third, through the intentional career-related actions parents undertake on behalf of their children. These processes do not occur uniformly for all students. Family contributions to work-related learning vary in relation to factors such as students' gender, race, ability or disability, socioeconomic status, and family type. As a result, some student may not be reaping the full benefits families can provide as students prepare for work and further work-related educational opportunities.

There is much evidence today that students are not as prepared for school-to-work and school-to-further education transitions as they might be (America's Choice, 1990; Grant, 1988). The present study supports these prior assessments; for example, student respondents had only modest levels of work effectiveness skills, limited levels of vocational identity, and a fair amount of career indecision. Many of these high school seniors seemed to have unrealistic expectations about graduation from a four-year college. About 20 percent had no post-high school educational plans, and 13 percent had no definite work or education plans at all.

Recommendations

Following are suggested recommendations for policy, practice, and research related to the role of the family in learning to work.

Recommendations for Public Policy and Practice

Government, education, and workforce policy makers should recognize that planned or not, the family is a participant in workforce education. The family has the potential to nurture workforce understandings, work readiness abilities, and work values. However, families also have the potential to contribute to the development of counterproductive knowledge and attitude structures among young people that may remain intractable throughout the life span.

Public discussions should be held to identify community strategies for nurturing and harnessing family strengths that will assist in preparing youth for school-to-work transitions. Such discussions should also focus on identifying practical and ideological factors which persist in limiting the public and private vision concerning work/family interrelationships.

Local communities and school boards should consider offering parent education as a required course for high school students. Such courses, when offered, should give specific attention to the role of the family in learning to work.

Consideration should be given to parent education with a work/family focus for welfare recipients, and federal and state job training recipients. Such parent education opportunities should also be made available as a continuing education option through established public and private continuing education delivery systems, including those within training and development units of business and industry.

Given that parent participation in school was associated with the development of students' strategies for learning, and both their academic and social integration in school, schools should seek ways to more fully involve parents in education for work programs, as full educational partners and as participants in educational policy setting relative to workforce education.

Based on the findings that extensive levels of adolescent employment (more than 20 hours per week) were associated with less parent participation in school and lower levels of academic integration in school, it is recommended that states and localities continue to review relevant youth employment regulations to determine whether they encourage a reasonable work/education balance for young people.

The role of family conflict in learning how to work; how moderate types may insome ways facilitate the development of learning and thinking strategies such as critical thinking, but how conflict may be associated negatively with work effectiveness skills, plans for higher education,and career decisiveness

How the intellectual/cultural environment within the family may contribute to the development of an intrinsic personal orientation to work, critical thinking ability, and plans to graduate from high school.

The family's organizational ability, and its relation to effort regulation as a learning strategy, students' integration in school, and higher levels of academic achievement.

The probable value of a democratic family style in contrast to a laissez-faire or authoritarian style with respect to the development of useful strategies for learning and children's integration in school.

How males and females may view the family context and its experiences differently and as a result, gain different understandings, skills, and values relative to work.

How satisfaction with family may relate to young people's post-high school plans. The present study suggests that less than positive views of the family experience are directly related to adolescents' plans to go right to work after high school, rather than continue their education.

How family work values may come to be internalized by young people within the family, and how such work orientations may relate to the strategies young people use to approach learning tasks.

Special attention should be given to assisting single parents and parents of students with disabilities in efforts to participate in their children's preparation for work, given the demonstrated challenges they face in creating positive contexts for family functioning and enacting the parental role. Similar supports should be provided for parents with limited economic resources and those with more limited educational backgrounds.

Parent education classes, although valuable, should not be viewed as the full solution to addressing work-family relationships within the educational context. Education for work programs as a whole need to be examined with respect to the adequacy of the conceptualizations of "work," "education," and "learning," that are driving program design and program content. For example, are work skills viewed as useful only in occupational contexts, or in family and community contexts too? Is education viewed mainly or solely within the lens of formal schooling? Is learning seen as an active or passive process? As acquisition of disciplinary knowledges and skills or as development and change in perspectives about work?

Recommendations for Further Research

The present study suggests a clear link between the family context and adolescents' preparedness for work and further education, but numerous questions remain about the role of the family in learning to work. One question concerns how specific family experiences affect work-related learning differently for males and females. Males and females did report different views of their family functioning and family work values. The study also found that female adolescents developed work-readiness attributes differently; females reported greater degrees of career maturity and work effectiveness skill understanding, for example. Questions are: How do these differences emerge? How do parents address work versus parenthood issues and decisions with male and female children? Which, if any, of the differences in work-preparedness outcomes persist in the long term? Do family influences interact differently with other work-related learning opportunities for males and females? If so, how?

Students in two-parent families viewed their families more positively than students in single-parent families. For example, they saw their families as more active and recreational and less disengaged, and reported more parental intentional interactions with children. Questions are: What specific challenges are faced by single parent families as they attempt to assist children in learning to work? What characteristics of single parent families are especially helpful in nurturing adolescents' work-related learning? What social and educational policies may most support efforts of single parents to facilitate their adolescents' school-to-work transitions?

The present study suggests that student employment may be related to how students view their families and the kinds of work-and learning readiness they develop. For example, students employed more than 20 hours per week saw their families in less positive ways, experienced less learning strategies, and were less well integrated in school. Other research has suggested that extensive non-school supervised work experience may have detrimental effects for teenagers (Greenberger & Steinberg, 1986; Stone, Stern, Hopkins, & McMillion, 1990). Further research is needed to determine the nature of the relationship between adolescent employment and family environment. Is employment a cause of a less positive family environment or an escape from it? Is employment a cause of less extensive integration in school, or a way out of an undesirable or intolerable school environment?

Final Comment

There is much more to learn, and to do about preparing young people for work. Our national future depends on our ability and willingness to become more effective than we have been in preparing students for meaningful and productive school-to-work transitions. This research points out that the family can be a great help in developing America's workforce, provided we resolve to build and harness family strengths, and give the family the attention it merits, in educational policy, practice, and research.

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